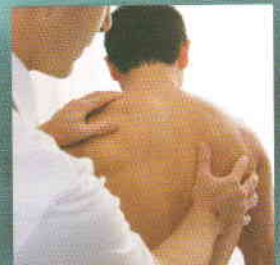


MATARY

T E X T B O O K

CLINICAL SURGERY

Mohammed El-Matary



www.mataryonline.net

MATARY

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Dedication

Allah the all merciful, I beg Thee
To accept this effort
For the soul of my mother
She was your gift for me

Acknowledgement

The author wishes to acknowledge with gratitude:

Dr. Said Abdel-Baky,

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Who had helped in reviewing of this book & who have contributed with his suggestions and ideas for the new edition.

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Ain Shams University

Preface

This book provides an update for medical students who need to keep abreast of recent developments. I hope also it will be useful for those preparing for postgraduate examination.

This book is designed to provide a concise summary of clinical surgery, which medical students and others can use as study guide by itself or with readings in current textbooks, monographs, and reviews.

Summaries of relevant anatomical considerations are included in every chapter, taking into account that this book is written primarily for those who have some knowledge of anatomy, physiology, biochemistry and pharmacology.

The author is extremely grateful to all the contributors for the high standard of the new chapters, and hopes that you, the reader, will enjoy going through these pages as much as he had.

M. El-Matary

Table of Contents

1	Swelling Sheet	1
2	Thyroid Sheet	28
3	Inguinoscrotal Sheet "Hernia"	79
4	Inguinoscrotal Sheet "Varicocele"	106
5	Inguinoscrotal Sheet "Hydrocele"	117
6	Breast Sheet	132
7	Lymphatic Sheet	166
8	Ischemia Sheet	191
9	Varicose Veins Sheet	221
10	Abdomen Sheet	242
11	Ulcer Sheet	289
12	Orthopedic Sheet	299
13	Nerve Injury Sheet	314
14	Parotid Sheet	320
15	Cleft Lip & Palate Sheet	328
16	Hypospadias Sheet	329
17	Undescended Testis Sheet	329

Table of Contents

1	Introduction	1
2	Methodology	2
3	Results and Discussion	3
4	Conclusion	4
5	References	5
6	Appendix A	6
7	Appendix B	7
8	Appendix C	8
9	Appendix D	9
10	Appendix E	10
11	Appendix F	11
12	Appendix G	12
13	Appendix H	13
14	Appendix I	14
15	Appendix J	15
16	Appendix K	16
17	Appendix L	17
18	Appendix M	18
19	Appendix N	19
20	Appendix O	20

- 1 -

SWELLING SHEET

Case Sheet for Swelling

History

Personal H:

* Name

اسمك ايه (ثلاثي)

* Age

عندك كام سنة

* Sex

* Marital status
(single-married-widow-divorced)

متزوج ؟
متزوج من امتي ؟
عندك كام عيل ؟
اصغر عيل قد ايه ؟

* Special habits of medical importance,

بتدخن ؟
كام سيجارة في اليوم ؟ بقالك كام سنة ؟
بطلت في خلال هذه الفترة ؟ بطلت ليه ؟
بتشرب خمرة او مخدرات ؟

* Address

انت ساكن فين ؟

* Residence

مولود وعایش طول عمرک هناك ؟

* Occupation,

بتشتغل ايه ؟

* If ♀ → menstrual history

اول مرة جتلك الدورة امتي ؟
اخر مرة جتلك الدورة امتي ؟
الدورة منتظمة ؟
بتيجي كل قد ايه ؟ وبتكون معاك كام يوم ؟
كميتها قد ايه ؟
رضعتي اولادك طبيعي ؟ لمدة قد ايه حصل مضاعفات ؟
استخدمت طرق لمنع الحمل ايه ؟

Complaint:

بلفظ المريض إيه اللي جابك المستشفى

HPI:

آخر مرة كنت سليم امتي + duration

1) Pain

Mnemonic for pain → Socrates:

- S → site.
- O → onset.
- C → character.
- R → radiation or referred.
- A → alleviating factor, associated symptom.
- T → timing.
- E → exacerbating factor.
- S → severity.

- **Site**

إين مكان الوجع ؟

→ Localized to swelling or shooting distally
(tumor compressing the nerve or infiltrating it)

- **Character**

الوجع ده شكله ايه

Dull aching pain → chronic conditions.

ثقل

Throbbing pain → pus formation.

نفج

Stitching

شكشة

- **Radiation:**

بيسمع في حته تانيه

- **What increases & what decreases it**

ايه اللي بيزوده – بينقصه

- **Onset**

حصل مرة واحدة ولا بيتدرج

- **Course**

بيزيد ولا زي ما هو ؟

- **Duration**

بقاله قد ايه

Associated Symptoms

معاه ترجيع ونفسك غمه عليك

- The most reliable way to obtain precise information on the location of pain is to ask the patient to point to the exact site of the pain and where it radiates. Pain may be localized or diffuse and can be referred. Localized pain is either musculoskeletal in origin or is indicative of disease, trauma or inflammation in the affected region. Pain may be referred to the corresponding sensory dermatome.

2) Swelling

- **Site** أين مكان الكلكوعة
- **Size** → (lemon size, orange size ...) حجمها قد ايه
- **Onset** اكتشفت الكلكوعة ازاي
 - **Accidental** → breast swellings
 - **Acute onset**: → sudden (within minutes) → Perforation.
→ rapid (hours or days) → acute inflammation.
 - **Gradual onset** (weeks or months): → chronic inflammation or neoplastic swellings
- **Course:** بتزيد ولا زي ما هيه
 - **Progressive**: → neoplastic swellings.
 - **Stationary**: → chronic inflammation.
 - **Regressive**: → inflammatory conditions.
 - **Fluctuating**: → chronic inflammation with acute exacerbation.
- **Duration:** بقالها قد ايه
 - **Short**: (days or weeks) → inflammatory.
 - **Long**: (months or years) → neoplastic.
 - **Since birth** → congenital.

N.B: Lumps with shorter duration + pain = acute inflammatory,
Lumps with longer duration + slight pain = chronic inflammatory.
Lumps with longer duration & no pain = benign tumor.
Lumps with shorter duration +/- slight pain = malignant tumor.

- **Other swellings:** في كلاكيع تاني عندك
 - Multiple lipoma, Neurofibroma.
 - Lymph nodes → in inflammatory conditions.
 - Metastasis in malignancy.
- **Effect on the general condition:** سخنت- اتر عشت - نفسك اتسدت - خسيت جامد
 - **Toxic symptoms**: → FAHM
 - **Malignant symptoms**: → cachexia.
 - **TB**: → night sweating, night fever, anorexia & loss of weight.
- **Apparent cause:** تفتكر ايه سبب الكلكوعة
 - Trauma, lifting heavy weight, emotional stress.
- **What increases & what decreases it** في حاجة بتزودها او بتنقصها

3) Disturbance of function

4) Review of Other systems:

- **GIT:** e.g nausea, vomiting, abd. pain, change in the bowel habits
- **Respiratory sys.:** e.g cough, hemoptysis
- **CVS:** dyspnea, chest pain, palpitations
- **Urogenital:** loin pain, dysuria,
- **Nervous sys.:** change in behavior, loss of consciousness
- **Musculoskeletal:** ms, bones or joint pain.

5) History of investigations or medications

Past history

- Similar attacks.
- Common diseases: (**DM**, Hypertension, **TB**, **B**, Hepatitis, **DVT**)
- Drug allergy & intake
- Blood transfusion
- Previous Operations

T.B	Hypertension	Diabetes
جالك زمان كحة ودم و بلغم كنت بتسخن بالليل وتبل الملاية عرق وجزول و حجزوك فى مستشفى الصدر و أخذت علاج لفترة طويلة	عندك ضغط منذ متي ؟ أخذت علاج ايه ؟ جرعته قد ايه ؟ آخر مرة قسته كان كام؟ حصل أي مضاعفات	عندك سكر ← نعم منذ متي ؟ أخذت علاج ايه ؟ جرعته قد ايه ؟ آخر تحليل كان كام ؟ حصل أي مضاعفات
Hepatitis		
لون عينك بقي اصفر ولون البول اتغير رحت الحميات		
D.V.T	Bilharziasis	
رجلك ورمت ووجعتك وحجزوك في المستشفى ادولك مسيلات دم		
Drug allergy		
بتأخذ ادوية بصورة منتظمة عندك حساسية من أي دواء		
Others		
نقلوك دم قبل كده عملت عمليات قبل كده ... نعم عملية ايه -- منذ متي -- حصل بعدها مضاعفات أو تلوث فى الجرح	جالك بلهارسيا قبل كده نزلت التربة قبل كده وجالك دم فى البول او البراز.. نعم الحكاية دي منذ متي أخذت علاج ايه جرعته قد ايه حلوك بعدها وقلوك خفيت نزلت التربة بعد كده	

Family history

- Similar condition in one of the members of the family.
- Consanguinity

Examination

General:

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

3 اسطمية

- Body built.
- Decubitus
- Facial expressions.
- Complexion → **(3 colors)** Jaundice, pallor & cyanosis.

3- حاجات

- Chest & heart
- Abdomen.
- Extremities
- Pulse, blood pressure & temperature.
- Head, Neck, Spine (esp. in breast swelling) → تانينين 3

Local: سلم على العيان و قف على يمينه



نسلم على العيان و نقف
على جنبه اليمين

Exposure → till area of LN drainage

Inspection:

و تعلق على From 2 different planes

A. Swelling

1. Number:

- Single or multiple
- Multiple swellings may be lymph nodes, lipomas...

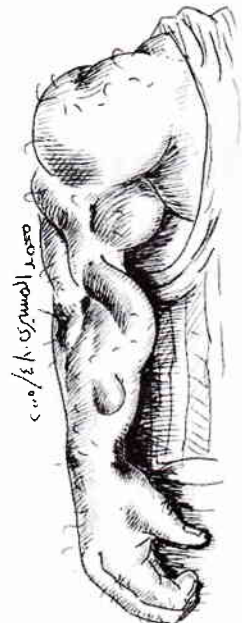
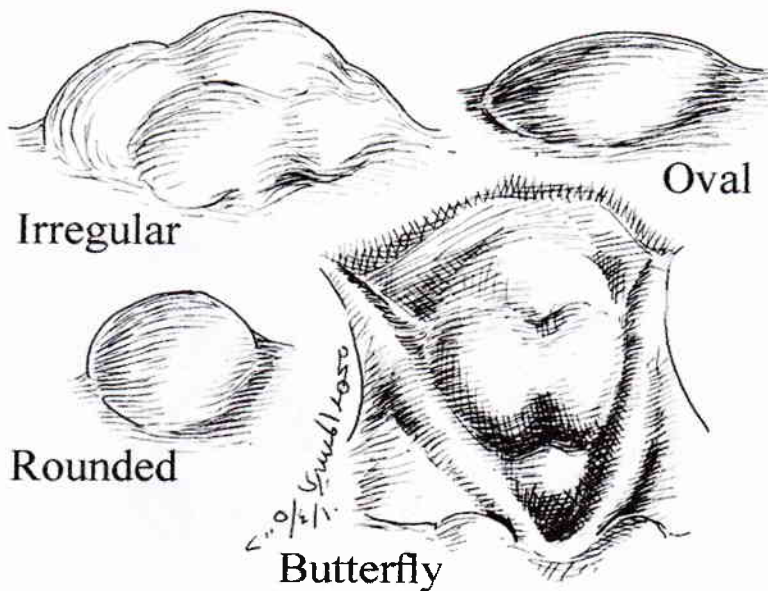
2. Site

- The anatomical region of the swelling.

3. Size

- In cm (best)

4. Shape



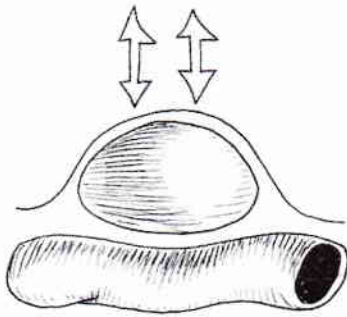
B. Skin overlying:

- Normal, Stretched, Pigmented,
- Show sign of inflammation (redness, edematous...),
- Dilated veins, Ulcer, Scar...

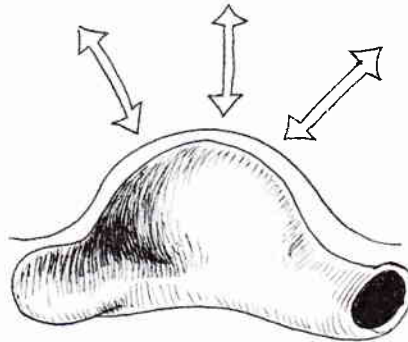
C. Special signs:

- Expansile impulse on cough → hernia.
- Pulsation → aneurysm, vascular swelling.
- Moves up with deglutition → thyroid.
- Moves up with protrusion of the tongue → thyroglossal cyst.

Transmitted pulsation



Expansile pulsation



محمّد المسويحي
٢٠٠٥/٤/١٠

Palpation:

1. Warmth: حركة بظهر اليد

- Temp ↑ in inflammatory swellings and vascular swellings



2.

Tenderness: حركة بطن اليد و عيني على وجه العيان

- Inflammatory swellings are mostly tender
- Neoplastic swellings are not tender.
- How to locate the point of maximum tenderness?



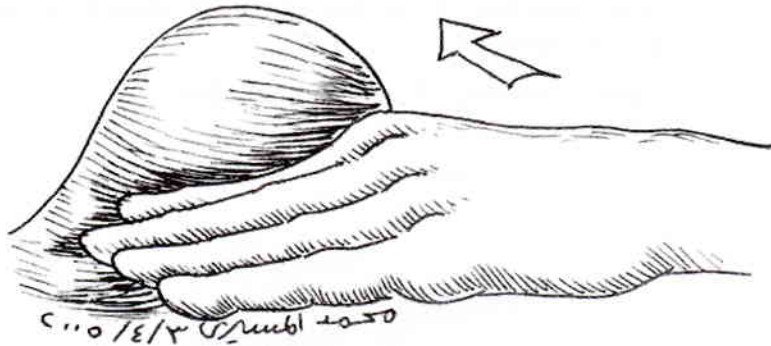
3. Surface: حركة براحة اليد

- Smooth, granular, nodular, lobulated...etc.



4. Edge: by starting to palpate away from the swelling towards it حركة بجانب اليد

- Ill-defined (finding no border), Well-defined (finding a border all around), Pedunculated.

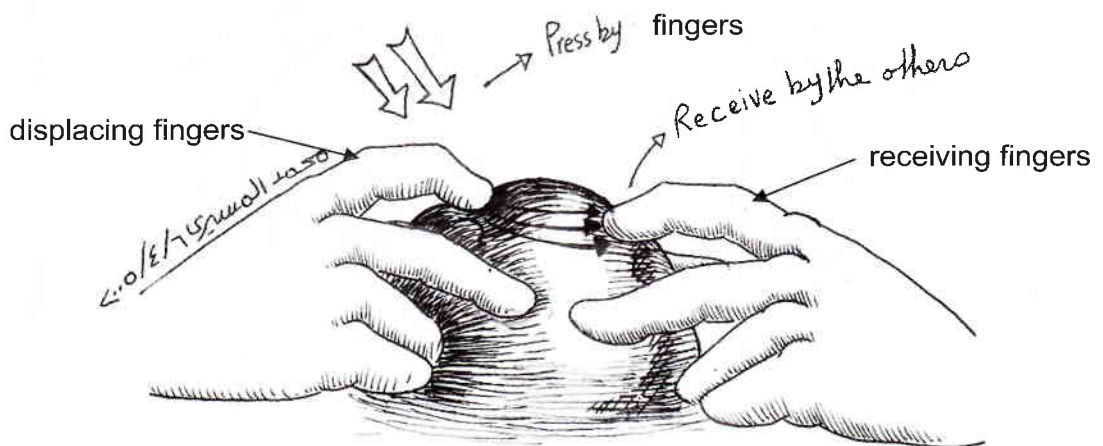


NB.

Slippery (moves in front of my advancing finger إيدي تغرز فيها) → **Lipoma**

5. Consistency: حركة بكل اليد

- Cystic or solid.
- **tests for cystic swellings:**
 - **Fluctuation test:**
 - If it contains fluid → it will fluctuate
 - It should be done in 2 perpendicular planes
 - Keep pressing by **receiving fingers** against one pole
 - Exert sharp pressure at opposite pole by **displacing fingers**.

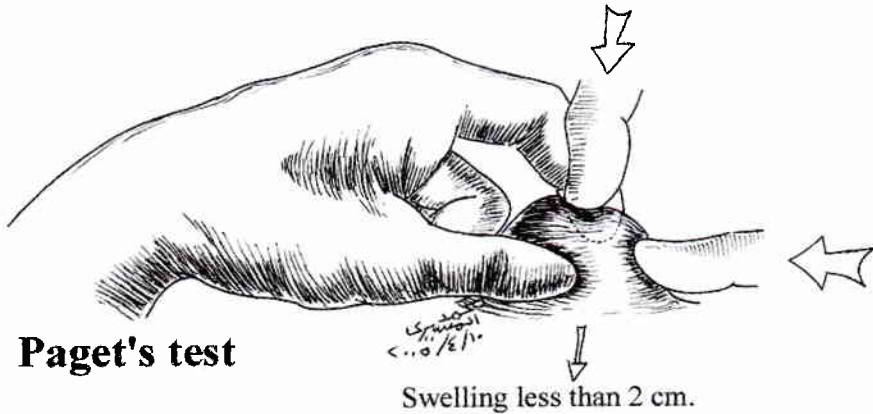


Fluctuation test

NB: pseudo-fluctuation can be elicited in lipoma

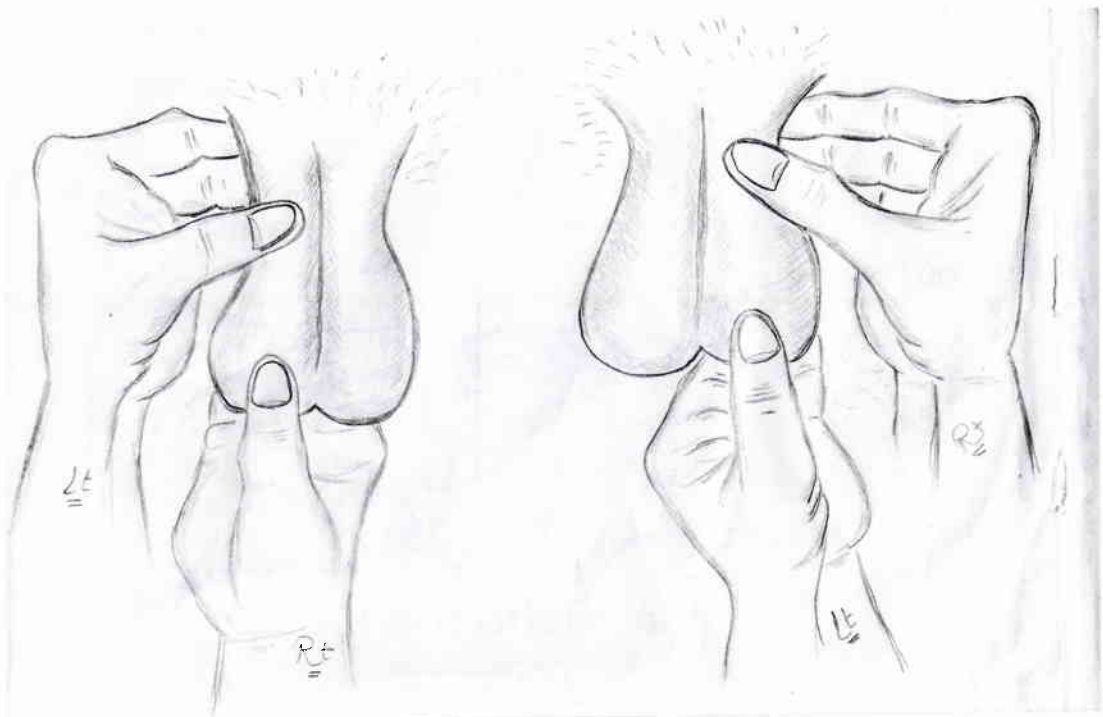
▪ **Paget's test:**

- It is used in small or tense swellings (< 2 cm).
- It compares the consistency at centre with that at periphery.
- Solid swelling → harder at center (due to greater concentration of solid tissue).
- Cystic swelling → softer at center.



▪ **Bipolar test:**

- For pedunculated swellings
- Fix by the upper hand and receive by it
- Press by the lower hand



- **In small swelling: (MODIFIED FLACTUATION TEST)**

2 fingers are placed on the swelling

The finger of the other hand tap the swelling in the center

Wave is felt by the 2 fingers on each side.

- **Fluid thrill:**

In big swelling: tapping on a side of the swelling →
percussion wave is felt on the other side.

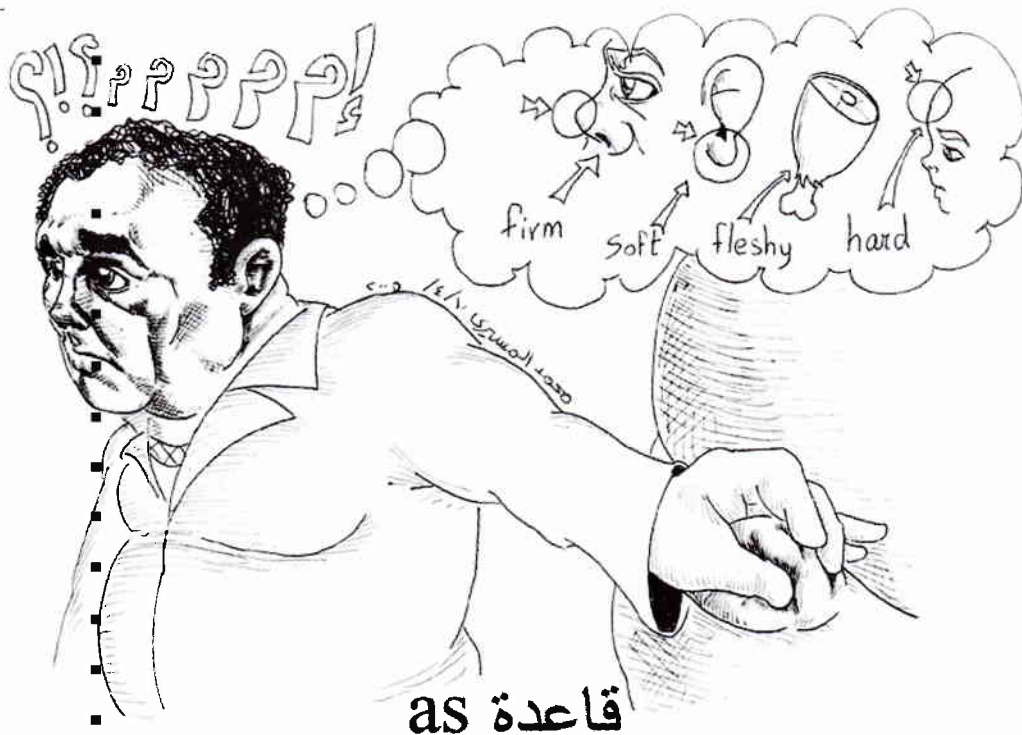
- **Cross fluctuation test** (to detect whether two adjacent cystic swellings are communicating or not):

Percuss the swelling by a finger & receive the impulse by a finger of the other hand placed on the 2nd swelling e.g. psoas abscess.

- **Solid swelling may be**

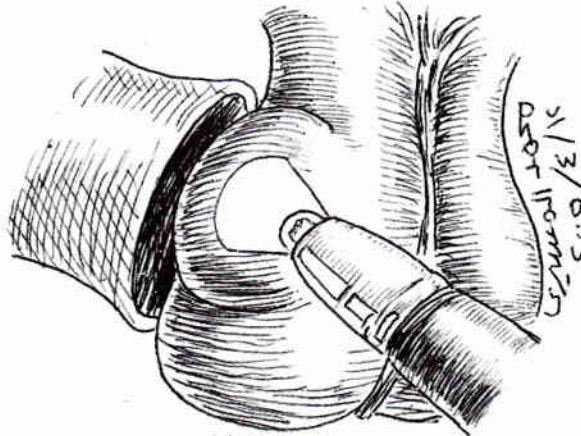
- Solid and soft → like a lobule of the ear.
- Solid & firm → like tip of the nose.
- Solid & fleshy → like relaxed muscle.
- Solid & hard → like forehead.

- In case of soft swelling it could be compressed to differentiate between reducible and compressible.



- **Trans-illumination Test:**

- If the swelling is cystic: → differentiates opaque from translucent
- Translucent cysts = clear fluid → cystic hygroma, menigocele, ranula, epididymal cyst.
- Opaque cysts = blood, pus.



Trans-illumination test

6. Relations (Mobility):

- What are freely mobile swellings?
- **Skin:**
 - *Not related to overlying skin* → skin can be pinched
 - *Attached to overlying skin* → can not pinch up Skin.
- **Muscle:** → Ms contraction →
 - *Less prominent* = deep to the muscle.
 - *More prominent* = superficial to the muscle.
 - **Swelling of the muscle**
 - * If mobile in both cases → superficial & not attached.
 - * If moves across muscle when it is relaxed & become fixed on contraction → swelling of the muscle.
 - * If mobile when the muscle is relaxed then becomes limited on contraction → attached to fascia.
- **Nerves:** arising from or attached to a nerve →
 - Can be moved across but not along the axis of the nerve.
 - May be tender.
 - There may be distal signs of motor or sensory affection.
- **Vessels:** arising from or attached to a vessel →
 - Can be moved across but not along the axis of the vessel.
 - May be pulsating.
 - There may be distal signs: varicosities, ischemia
- **Tendons:** attached to tendon of a muscle → moves across the tendon & becomes fixed when muscle is contracted.
- **Bones:** → fixed and immobile from the start.

7. Draining Lymph Nodes:

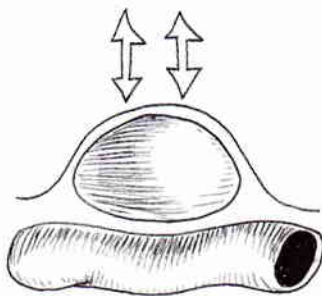
No examination of a swelling is complete without the examination of the draining L.Ns

8. Special Signs:

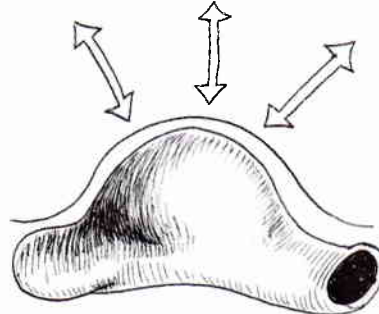
1- Pulsation:

- *Expansile pulsation* → it arises from the wall of an artery
- *Transmitted pulsation* → it lies very close to an artery.
- **How to differentiate?**
 - * 2 fingers, one from each hand are placed on the swelling:-
 - 1) When the 2 fingers are raised and separated with each beat of the artery → Expansile Pulsation
 - 2) When the 2 fingers are only raised → transmitted pulsation

Transmitted pulsation



Expansile pulsation



Grasp the swelling and ask the patient to cough:

Transmitted = forward thrust without ↑ in size.

Expansile = ↑ in size in all direction,

2- Thrill: → felt over aneurysm and A-V fistula

3- Impulse on cough: in swellings which are

- In continuity with abdominal cavity (hernias, ilio-psoas abscess)
- In continuity with pleural cavity (empyema necessitates)
- In continuity with spinal cord (meningocele).

4- Reducibility: Swelling reduces or disappears as soon as it is pressed upon in a certain direction and reappears again on coughing or straining (e.g. hernia).

5- Compressibility: = Flattening under pressure and regains its original size on release of the compression. (e.g. Hemangioma, saphena varix).

Percussion:

1. Over the swelling:

- Resonant → over gaseous swelling (hernia, laryngeocele)
- Dull → over cystic & solid swellings

2. Around the swelling (to determine its relation to surrounding organs):

- The dullness of liver swelling is continuous with the normal hepatic dullness

Auscultation:

- Systolic murmur → aneurysm
- Machinery murmur → A-V fistula
- Venous hum → portal HTN
- Intestinal sound → hernia

Special Investigations

Laboratory Investigations:

Hb%, urine and stool analysis, blood sugar, blood urea.

Radiological Investigations:

Plain & contrast X- ray.

Endoscopic Investigations:

Gastroscopy, duodenoscopy, colonoscopy, cystoscopy

Provisional Diagnosis

Anatomical (where is the swelling?)

It is diagnosis of the region (Skin, S.C, muscle, tendon, vessels, nerve) or organ (spleen, liver, gall bladder) which is affected.

Pathological (what is the swelling?)

Congenital, traumatic, inflammatory, neoplasticetc.

Associated condition

T.B., diabetes, chronic bronchitis, liver cell failure, Ascites....etc.

Browse's introduction to the symptoms & signs of surgical disease/ Ch1 examination of a swelling (lump)/ P 29

Questions & Answers

Q. What are the hazards of smoking?

A.

- CVS: atherosclerosis, coronary heart disease.
- Chest: emphysema & bronchial carcinoma
- GI: peptic ulcer
- Cancer: cancer (lip, tongue, esophagus, Hypemephroma) nicotine → nitrosamine → which is precancerous
- Pregnancy:
 - maternal: e.g.: placenta previa
 - Fetus: e.g.: ↑ risk of mortality

Q. Why we use the dorsum of the hand to feel the temperature?

A.

Because temperature receptors are more in the dorsum of the hand.

Q. When swelling is said to be freely mobile?

A.

When it moves in all direction as subcutaneous swellings.

Q. When the swelling moves in one direction?

A.

Swelling at:

- Muscle: e.g.: desmoid tumor
- Tendon: e.g.: ganglion
- Nerve: e.g.: neurofibroma.
- Artery: e.g.: aneurysm

Q. When swelling is said to be fixed?

A.

Swelling at bone: e.g.: osteoma

Q. What are the difference between radiating pain & referred pain ?

A.

- Radiating pain:

At the site of the lesion and the patient feels pain in other site also as acute cholecystitis pain in Rt Hypochondrium radiation to the shoulder. It is the extension of pain to another site whilst the initial pain persists.

- Referred pain:

The patient feels the pain in a site other than the site of the lesion as: in acute appendicitis the pain at first around the umbilicus only (not over the appendix) then shifts to the Rt Iliac fossa.

Q. What is the mechanism of referred pain?

- A.**
1. **Convergence-projection theory:** The brain is accustomed to receive impulses from the skin, not from the viscera
 2. **Facilitation theory:** afferent from the affected viscera lowers the pain threshold of cells receiving impulses from the skin, so slight stimulation of the skin produces pain

Q. What is the difference between paraesthesia & anesthesia?

- A.**
- Paraesthesia → abnormal sensation e.g. tingling, numbness...
 - Anesthesia → sensory loss

Case 1. Subcutaneous Lipoma

Q. What is the diagnosis?

- A.**
- Subcutaneous lipoma on the dorsum of the right arm not complicated.

Q. How did you reach this diagnosis?

- A.**
- Because there is a swelling which is :
- 1- Very slowly growing swelling.
 - 2- Soft in consistency (pseudofluctuant).
 - 3- Slippery edge.

Q. What are the points of difference between lipoma and sebaceous cyst?

- A.**
- **Inspection:** the punctum in the sebaceous cyst & not in lipoma.
 - **Palpation :** fluctuation test +ve in sebaceous cyst, while lipoma is pseudo fluctuating

Q. What is the explanation of the slippery edge of the lipoma?

- A.**
- Because lipoma is present within a very loose compressed tissue (**false capsule**) and true capsule and it moves in-between so that pressure on one edge moves it, it is soft so it becomes invaginated in front of my advancing finger

Q. Why is lipoma is described as pseudo fluctuant?

- A.**
- This is because fat globules forming the lipoma are very soft and fat changes to semisolid at the body temperature.

Q. Does the lipoma may become firm or hard? And when?

A.
Yes, lipoma may become firm or hard.
It becomes firm if it is fibrolipoma or when it is subfascial. It becomes hard when it is subperiosteal.

Q. How do you elicit fluctuation in a very small swelling?

A.
By Paget's test; the swelling is fixed by the index and thumb of the left hand and pressure is applied on the center of the swelling by the index of the right hand. And we compare the centre and the periphery of the swelling.

Q. What are the differentiating points between a subcutaneous and a subfascial lipoma?

A.

	Subcutaneous lipoma	Sub facial lipoma
Shape	▪ Hemispherical more than flat	▪ Flat more than hemispherical.
Surface	▪ Lobulated surface	▪ Smooth surface
Edge	▪ Slippery	▪ Less slippery
Attachment to overlying skin	▪ Attached to multiple points	▪ Not attached
Consistency	▪ Soft (pseudofluctuant)	▪ firm

Q. How did you detect the skin attachment?

A.
Skin attachment is detected by pinching and gliding.

Q. What are the different sites of lipoma?

A.
Lipoma known as the "universal tumor" because it can occur at any site in the body (except the brain, eyelid and penis), the common sites are:

1. Subcutaneous lipoma
2. Subfascial lipoma
3. Intermuscular lipoma
4. Intramuscular lipoma
5. Subperiosteal
6. Subserous lipoma
7. Extradural lipoma
8. Retroperitoneal lipoma
9. Subsynovial
10. Intraglandular

Q. What is the site in which lipoma considered precancerous?

A.

Retroperitoneal lipoma some authors believe that It is malignant from the start.

Q. Mention the multiple skin swellings you know?

A.

- | | |
|-----------------------------|------------------------------|
| 1. Multiple Lipomata | 6. Multiple Neurofibromata |
| 2. Multiple Sebaceous Cysts | 7. Multiple Papillomata |
| 3. Multiple Naevi | 8. Multiple Warts. |
| 4. Multiple Hemangiomata | 9. Multiple Keloids |
| 5. Multiple Lymphangiomata | 10. Multiple Boils |
| | 11. Multiple Skin Metastases |

N.B. This doesn't include the multiple subcutaneous swellings which are not originating from the skin or its appendages e.g. generalized lymph node enlargement, multiple exostoses, multiple hernias...

Q. Mention the commonest multiple skin swellings?

A.

Multiple naevi.

Q. What is the treatment of this patient?

A.

The treatment of lipoma is usually conservative.

The indications of excision are:

- 1) Cosmetically annoying the patient.
- 2) Complicated.
- 3) Painful.
- 4) Causing pressure on a surrounding structure.

Q. What are the complications of a lipoma?

A.

- Cosmetic disfigurement.
- Pressure on a surrounding structure.
- Calcification.
- Myxomatous degeneration.
- Malignant transformation (liposarcoma) if retroperitoneal.
- Pressure on the spinal cord not the brain.
- Intestinal obstruction or stridor.

Q. What do you know about Dercum's disease?

A.

Dercum's disease is a painful diffuse lipoma, also called "adiposa dolorosa". It affects females in the form of painful fatty deposits in the thigh.

Q. When lipoma becomes painful?

A.

Lipoma become painful in the following conditions

- Adipose dolorosa (Dercum's disease)
- Infection
- Malignancy
- Lipoma pressing on a nearby nerve

Q. What are the sites never to be affected by lipoma? And why?

A.

Penis, brain & eyelid .because they don't contain fat

Browse's introduction to the symptoms & signs of surgical disease/ Ch3 skin & subcutaneous tissue / P 78

Case 2. Hemangioma

Q. What is the diagnosis?

A.

Cavernous hemangioma of the ... (mention the site) ..., not complicated.

Q. How did you reach this diagnosis?

A.

Because it is:

- 1- A skin swelling dating since birth (may be shortly after).
- 2- It is pink in color.
- 3- Compressible.

Q. Explain: Why hemangioma is compressible?

A.

Hemangioma is compressible as the blood which it contains empties into the veins communicating with it.

Q. What are the other compressible swellings?

A.

- 1- Lymphangiomas 2- Aneurysms. 3- Saphena Varix, 4- Varicocoele.
5- pneumatocoele. 6- Laryngeocoele 7- Tracheocoele. 8- Pharyngeal pouch,

Q. Where is the commonest site of hemangioma?

A.

At the head and neck region.

Q. Does hemangioma occur in internal organs?

A.

Yes, for example the liver is the commonest internal organ affected.

Q. What are the classifications of the hemangioma you know?

A.

➤ Hemangioma is classified as:

1) Capillary Hemangioma:

- Port wine stain,
- Strawberry angioma
- Salmon patch
- Spider naevi

2) Venous Hemangioma (Cavernous hemangioma)

3) Arterial Hemangioma (Cirroid aneurysm)

➤ Other new classification:

a) Involuting hemangioma:

1. Superficial
2. Deep
3. Combined superficial and deep

b) Non-involuting hemangioma:

- 1- Port-wine stain
- 2- Cavernous hemangioma
- 3- Venous racemose aneurysm
- 4- A-V fistula

Q. Describe the features of cirroid aneurysm?

A.

Cirroid aneurysm is:

- 1- A Pulsating compressible red swelling.
- 2- Site: most commonly in the head and neck (scalp especially temporal region)

Q. What are the complications of a Hemangioma?

A.

- Hemorrhage.
- 2ry infection → septicemia

Q. Mention the different lines of treatment of a cavernous Hemangioma?

A.

The different lines of treatment are:

- 1) Injection of a sclerosant material
- 2) Embolization injection.
- 3) Surgical excision
- 4) Laser photocoagulation

Q. What is the material usually used in injection sclerotherapy?

A.

It is Bucrylate material.

Q. What is embolization injection and how it acts?

A.

It is injection of a special material into the feeding artery of the Hemangioma through angiography.

This material produces occlusion of this artery and so necrosis of the Hemangioma.

Q. What are the commonest materials used in embolization?

A.

Gelfoam and silicon particles.

Q. What are the different types of hamartomas?

A.

1. Hemangiomas
2. Lymphangiomas
3. Neurofibromas
4. Benign naevi.

Q. Define hamartoma?

A.

Hamartoma is a malarranged normal tissue. It is characterized by a rate of growth similar to the surrounding structures".

Q. What are the different types of lymphangioma?

A.

There are two types:

1. Capillary lymphangioma (lymphangioma circumscriptum)
2. Cavernous lymphangioma (cystic hygroma)

Q. What is the most characteristic sign of cystic hygroma?

A.

It is the only translucent neck swelling.

Q. When does it become opaque?

A.

When it becomes infected

Q. Is lymphangioma compressible or not?

A. Lymphangioma is partially compressible.

Q. Why lymphangioma is partially compressible?

A. Because lymphangioma is formed of multiple cysts communicating with each other. It is partially compressible.

- It is compressible → because the outer cysts empty their content of lymph into the inner cysts.
- Its compressibility is partial → because it does not empty freely into lymph vessels which are very small.

Q. Mention the types of neurofibroma you know?

A. Neurofibroma includes the following types:

- 1) Solitary neurofibroma
- 2) Generalized neurofibromatosis (von Recklinghausen's disease of nerves)
- 3) Molluscum fibrosum
- 4) Plexiform neurofibroma (pachy dermatocoele)
- 5) Elephantiasis neurofibromatosis.

Q. Mention the types of benign pigmented naevi (moles)?

A. Benign pigmented naevi include the following types:

1. Intradermal naevus
2. Junctional naevus
3. Compound naevus (giant naevus)
4. Blue naevus
5. Halo naevus
6. Spindle cell naevus.
7. Lentigo

Q. Mention the age of onset of benign pigmented naevi?

A. They appear in childhood and adolescence, rarely do they present at birth.

Q. Mention what you know about congenital giant naevus?

A. It is present since birth, may occupy very large areas of the body, usually hairy, and it is of bad prognosis as it may change malignant in 15% of cases.

Case.3 Dermoid Cyst

Q. What is the diagnosis?

A.
Implantation dermoid cyst.

Q. Why you diagnose this swelling as an implantation dermoid cyst?

A.
Because it is:
1- A chronic slowly growing painless cystic swelling.
2- Related to puncture injury or scar of previous injury.

Q. Enumerate the types of dermoid cyst?

A
1) Sequestration dermoid cyst
2) Implantation dermoid cyst
3) Tubulodermoid cysts
 a. Thyroglossal cyst
 b. Branchial cyst)
4) Teratomatous dermoid cyst

Q. What are the types of sequestration dermoid cysts?

A.
Sequestration dermoid cysts occur at the lines of fusion of the body:
1. **Face:** External and internal angular dermoids
2. **Ear:** Pre & post-auricular dermoids.
3. **Neck:** Midline anteriorly (sublingual, submental & suprasternal).
4. **Trunk:** Midline anteriorly and posteriorly.

NB. Sequestration dermoid cysts never occur in limbs as they develop from buds (no line of fusion)

Q. Where does implantation dermoid cyst usually occur?

A.
In the hand of manual workers (especially tailors)

Q. Does implantation dermoid cyst may be iatrogenic?

A.
Yes, it may be iatrogenic if we use a skin graft in hernioplasty operation.

Q. What are the complications of sequestration dermoid cysts?

A.

1. As any cyst (rupture, infection....)
2. Cerebral compression: very rare (dumbbell or hour glass dermoid)

Q. What is the result of transillumination test in dermoid cysts?

A.

They are opaque.

Q. What is the treatment of this case?

A.

The treatment of this case is excision of the cyst to prevent complications especially secondary infection.

Mnemonic to describe swelling → Scalp:

S → site, size, shape, surface, skin overlying, scar, special signs.

C → consistency.

A → attachment to surrounding structures.

L → illumination.

P → pulsations.

Case4.sebacous cyst

Q what's your diagnosis?

A. Sebaceous cyst

Q. Why?

A.

- By history: slowly growing painless swelling in an adult that becomes painful if infected.
- By exam: tense cystic swelling attached to skin at punctum, discharging dried sebum

Q. Mention the points of difference between dermoid cyst and sebaceous cyst?

A. Dermoid cyst is lax cystic and has no attachment to the skin at all while sebaceous cyst is tense cystic and has an attachment to the skin at the punctum.

Q. What is the punctum of the sebaceous cyst?

A. It is a black dot that represents the head of the dried sebum which obstructs the opening of the ducts of the sebaceous glands.

Q. What do you know about sebaceous horn?

A. It is one of the complications of sebaceous cyst and it is dried sebum, protruded from the punctum over the skin

Q. What do you know about Cock's peculiar tumor?

A. It is one of the complications of sebaceous cysts and it is ulceration of sebaceous cyst → simulating squamous cell carcinoma, but its base is not indurated.

Q. Does sebaceous cyst affects any area of skin?

A. It affects any area of skin except palm and sole as they are devoid of sebaceous glands.

Browse's introduction to the symptoms & signs of surgical disease/ Ch3 skin & subcutaneous tissue/ p74.

Topics related to oral discussion:

- 1-Multiple neurofibromatosis
- 2-Ganglion

- 2 -

THYROID SHEET

Case Sheet for Thyroid

History

Personal H:

- **Name:**
- **Age:**
 - 15-20 years: physiological goitre (diffuse), papillary carcinoma (nodular)
 - 20-30 years: SNG, 1^{ry} toxic goitre.
 - 30-40 years: 2^{ry} toxic goitre
 - > 50 years: anaplastic carcinoma
- **Sex:**
 - Benign thyroid swelling → 9:1 more in females.
 - Malignant thyroid condition → 3:1 more in females.
- **Marital status:**
- **Special habits of medical importance**
- **Address:**
- **Residence:** Oasis is endemic area.
- **Occupation:**
- **Menstrual history:** → 2^{ry} amenorrhea either due to thyrotoxicosis or pregnancy?

Complaint:

بلفظ المريض إليه اللي جابك المستشفى

+ Duration

HPI:

آخر مرة كنتي سليمة امتي

1. Pain

- Site, Character, Radiation, What increase or decrease, Onset, Course, Duration, and what associates.
 - **Site** → localized to swelling or radiating to the ear

2. Swelling:

a) **Site**

b) **Size** → (lemon size, orange size ...)

c) **Onset**

ابتداءً ازاي

- Accidental (e.g S.N.G)
- Acute (bacterial thyroiditis)

d) Course:

- Progressive
- Regressive.
- Stationary
- Fluctuating.

e) Duration: أول مرة لوحظ:

- Short: (days or weeks).
- Long: (months or years).
- Since birth → congenital.

f) Other swellings:

- Lymph nodes → in inflammatory conditions.
- Metastasis in malignancy.

g) Effect on the general condition:

- Toxic symptoms:
- Malignant symptoms: → cachexia.

h) Apparent cause: → i.e. relation to pregnancy, menstruation, lactation & emotional stress.

i) What increase & what decrease it

3. Disturbance of function



Pressure manifestations

- Trachea → Positional dyspnea

- بيجيك كرشة نفس؟ بتزيد بالليل لما تيجي تنامي

- Esophagus → Dysphagia

- هل في صعوبة في البلع؟

- RLN → Hoarseness of voice

- حصل تغير او بحة في الصوت

- IJV → Black outs which increases on bending forward

- بتشوفي ستاير سوداء او حمراء بتزيد لما توطي للامام

- CCA → Dizziness

- بيجيك نوبات بتغيب فيها عن الوعي

- Vagus → ear pain

- بتحسن بوجع في وذنك

- Sympathetic chain → Horner's \$

- مش عارفة تقفلي عينك كويس ومفيش عرق في نصف وجهك

Toxic manifestation

➤ **Nervous**

- Insomnia متعودة تنامي كام ساعة ؟ وهل حصل تغير في عدد الساعات؟
- Night mares هل هناك كوابيس بتحصل اليومين دول؟
- Fine tremors هل هناك رعشة في ايديك وكباية الميه بتتهز في ايديك؟
- Irritability انتي بقيتي عصبية اليومين دول وخناقك كترت مع جوزك واهلك اكثر ما انتي متعودة

➤ **Cardiac**

- Palpitation هل هناك رفرفة في قلبك؟ منتظمة زي دقات الساعة ؟ ولا متلخبطة مع المجهود ولا انتي مرتاحة
- High cardiac output heart failure - رجلك ورمت وبيجليك كرشة نفس

➤ **Metabolic**

- Heat intolerance حسيت ان طبيعة لبسك اتغيرت وبقيت تلبس خفيف في الشتاء ولا مفيش تغير في طبيعة اللبس واحساسك بحرارة الجو
- Thyroid paradox - بتكلي اكثر مانتى متعودة وبتخسي كثير

➤ **Eye**

- Exophthalmos - بتحسي ان عنيك طلعت لبره
- Diplopia - بتشوفي الحاجة اتنين وممكن تتكعيلي علي السلم

➤ **Genital**

- Female menorrhagia then amenorrhea هل هناك لخبطة في الدورة
- Male impotence هل هناك مشكلة في الانتصاب وعلاقتك بمراتك

➤ **G.I.T**

- Diarrhea - متعود تخش الحمام كام مرة , ودلوقت زادت عدد مرات التبرز

➤ **Urinary**

- Polyuria - بتتبول كثير اليومين دول

➤ **Skin**

- Sweaty, warm - بتحس ان جلدك دافي وعرقان

➤ **Subcutaneous tissue**

- في ورم موجود تحت الجلد

➤ **Muscle**

- Myopathy

- بتروح الشغل زي ما انت متعود ولا بطلت من احساسك بالتعب ولو واحدة ست ,
بتعملي شغل البيت زي الاول

➤ **Bone**

- Osteoporosis

- هل هناك نشر في عظامك

➤ **Manifestations of hypothyroidism:**

Slow thinking, apathy, tendency to sleep,
Loss of appetite, increase body weight, Oligomenorrhea,
constipation, intolerance to cold weather.

4. Other systems

- Lung metastasis: cough, hemoptysis & chest pain
- Bone metastasis: bone ache & pathological fracture
- Liver metastasis: jaundice & Rt. hypochondrial pain

5. History of investigations or medications

Past history

- Similar attacks.
- Common diseases: (DM, Hypertension, TB, B, Hepatitis, DVT)
- Drug allergy & intake
- Blood transfusion
- Previous Operations or radiotherapy to the neck

Family history

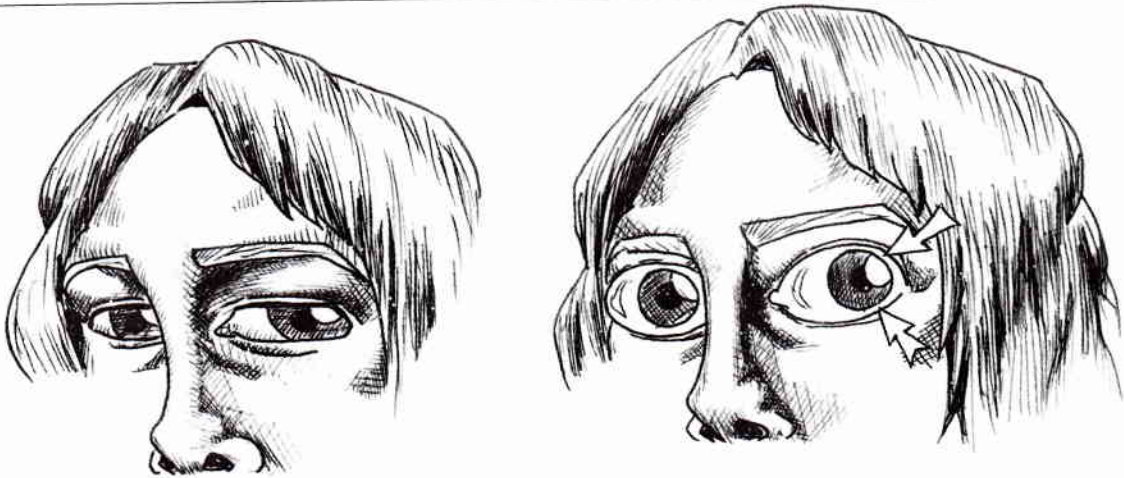
- Similar condition in one of family members:
 - Pendred \$
 - MEN-II (sipple \$)
- Consanguinity

Examination

General:

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

- 3 {
 - **Body built:**
 - Underweight → hyperthyroidism & malignancy
 - Overweight → hypothyroidism
 - **Decubitus:**
 - Orthopenic in thyrotoxic HF
 - **Facial expressions.**
 - Irritable → thyrotoxicosis.
 - Lazy → myxoedema.
- 3 {
 - **Complexion → (3 colors):**
 - Jaundice → antithyroid drugs or liver metastasis in carcinoma
 - Pallor → thyroid dysfunction (hypo or hyper) or malignancy
 - Cyanosis → retrosternal goitre (RSG)
- 3 {
 - **Chest**
 - **Abdomen** → Hepatosplenomegaly in Graves', Hashimoto
 - **Extremities**
 - Tremors, skin temp. and sweating, clubbing
 - LL: State of muscles, edema, pretibial myxoedema.
- **Pulse, blood pressure & temperature.**
- **Head :**
 1. Scalp Multiple swelling (metastasis).
 2. Hair: loss of hair in the outer part of eye brow (myxoedema).
 3. Tongue: Tremors.
- **Eye:**
- **How to examine Exophthalmos**
 - **To show True or False:**
 - [1] From the front of the patient we found
 - Rim of sclera above the cornea → false exophthalmos
 - Rim of sclera above and below the cornea → true exophthalmos



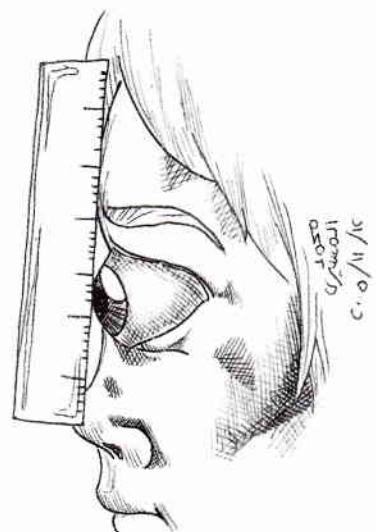
[2] Frazer's Test: To see the obliteration of sulcus of Orbital margin with slight closed eye.

[3] Naffziger Test: To see the level of supra & infra orbital ridge with cornea



[4] Ruler Test:

To see the level of supra & infra Orbital margin with cornea by a Ruler.



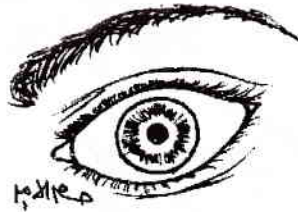
➤ **To determine the degree:**

[5] Ruler: To measure distance between lateral Orbital margin and apex of cornea (Normally = 15-17 mm).

[6] Exophthalmometer:

▪ **How to examine eye sign**

- Dalrymple sign



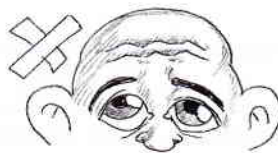
Rim of sclera between cornea & upper eye lid

- Stellwag's sign

Infrequent blinking

Tremors on closing the eyelids lightly.

- Joffroy's sign.



Lack of wrinkling of forehead on looking upwards

- **Eye movements:**
 - Mobius sign



Failure of convergence

- **Von Graefe`s sign**



Lid lag

- Jaundice (liver metastasis), chemosis.
- Corneal ulcers or ophthalmitis.

- **Rosenbach's sign :**

- Fine tremors of the upper eyelid when eyes are gently closed.

- **Topolansky's sign :**

- Congestion of the pericorneal region of the eye in patient with grave's disease

- **Jellinek's sign :**

- Brownish pigmentation of the eyelid , especially the upper lid

Local: سلم على العيان و قف على يمينه

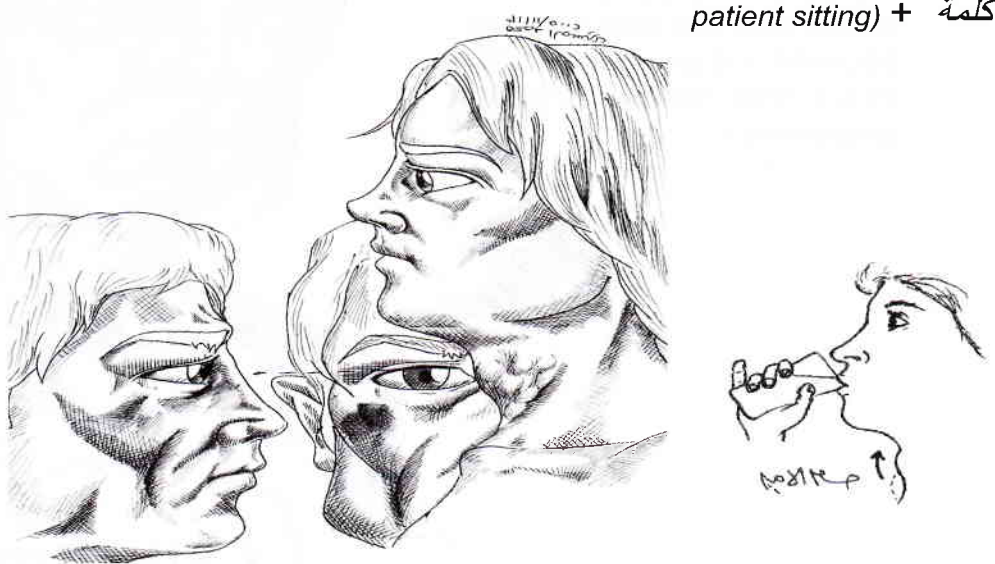
Exposure → from the nipple upwards



Inspection:

From 2 different planes
sides with the
السر ابلع ريقك

(from front &
patient sitting) + كلمة



A. Swelling:

1. Site

- Swelling in the front of the lower part of the neck

2. Size

- Measuring

3. Shape

B. Skin Overlying:

- Normal, Stretched, Pigmented,
- Show sign of inflammation (redness, edematous...),
- Dilated veins crossing the manubrium (retrosternal goitre)
- Scar of previous operation (recurrent goitres)

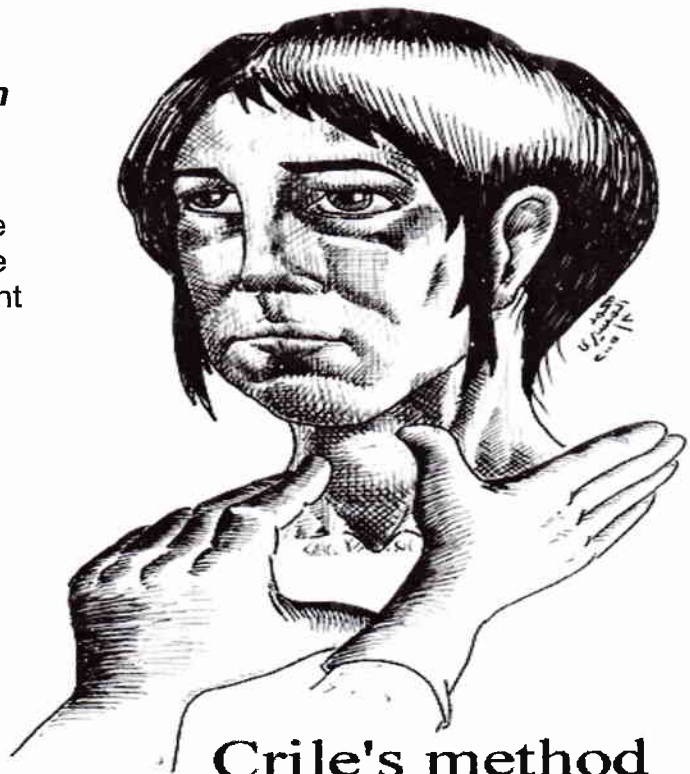
C. Special Signs:

- Moves up with deglutition.
- Moves up with protrusion of the tongue → thyroglossal cyst.
Fix the mandible & ask the patient to protrude his tongue (for swelling in the midline or near the middle)
- Pulsation → look tangentially.

Palpation:

- **Palpation may be from front by:**

- **Crile's method.** (Thumb placed over the lobe not to be palpated and palpate the lobe by the other hand while patient swallowing).



Crile's method

- **Palpation of Thyroid gland from behind by:**

- **Lahey's method.** (Push Thyroid to one side by hand then examine by other)



Lahey's method

- With the neck flexed
 - Place the thumbs upon the nape of the patient
 - The other finger tips meeting at the midline anteriorly.
 - Start by palpating one lobe at a time.
 - Always tilt the head to the side you palpate to relax the fascia for better palpation.
 - Palpate the swelling as usual.....
- **Examination of the lower border.**



Examination of lower border

- **Examination of the isthmus:**

- Stand behind the patient.
- Put one of your hands on the head of the patient.
- Tilt the head of the patient forward.
- Put the index of the other hand on the midline of the trachea and palpate.
- Ask the patient to swallow.



Examination of isthmus

Swelling

1. **Warmth:** حركة بظهر اليد
2. **Tenderness:** حركة ببطن اليد و عيني على وجه العيان
 - Inflammation → mostly tender
 - Neoplasm → not tender.
3. **Surface:** حركة براحة اليد
 - Smooth, nodular...etc.

4. Edge:

حركة بجانب اليد

- Find out the lower edge → if ill defined → retrosternal goitre
- Well circumscribed except backward.

5. Consistency:

حركة باليدين

- Cystic or solid.

-Firm

-Soft

-Hard

6. Relation (mobility):

1. Skin (fixed or not), pinch the skin over the swelling.

2. Sternomastoid

a) Superficial or deep:

- **Bilateral:** ask patient to flex the neck against resistance.
- **Unilateral:** Ask patient to rotate his head against resistance

b) Fixed or not:

- Turn the head to the tested side, pinch the muscle from the swelling & ask the patient to swallow.
- If you pinch the muscle freely and not moved with swallowing → not fixed.

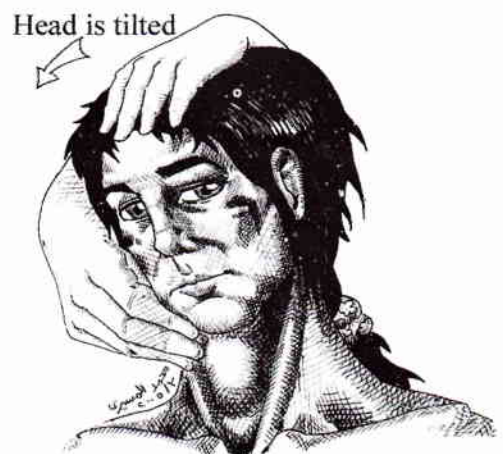
3- Trachea

Attachment to the swelling → from the front,
Fix the thyroid cartilage by one hand & rock the thyroid gland vertically over the trachea

3 Tubes

1) Carotid artery

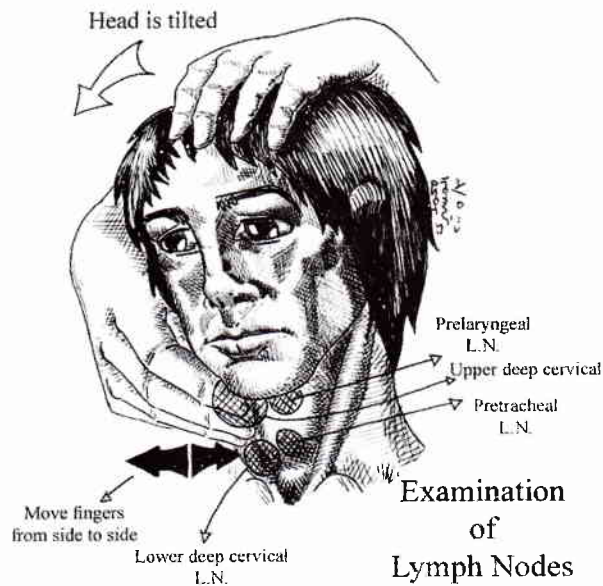
Pulsation → site & volume
(felt against carotid tubercles
on the transverse spine of 6th
cervical vertebra.



Carotid pulsation

2) Lymph nodes

No examination is complete without examining the draining LNs (upper & lower deep cervical, prelaryngeal & pretracheal LNs).



3)

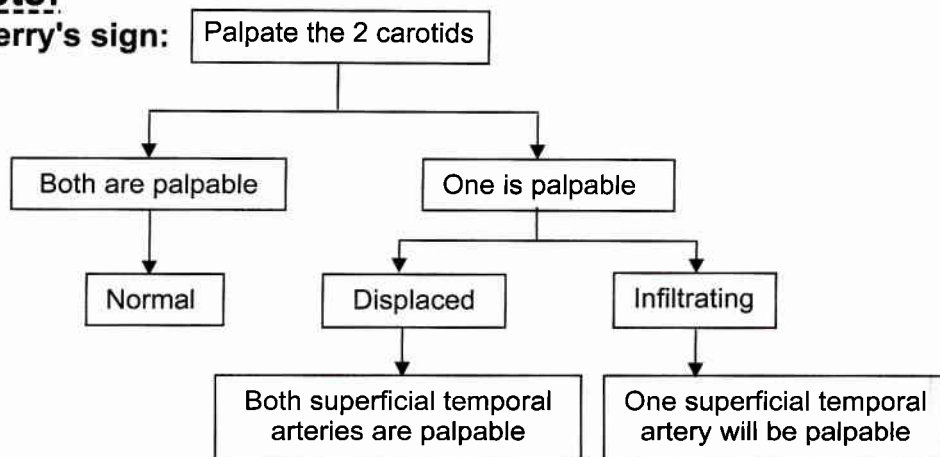
Trachea

- Position → central or deviated
- Important in anaesthesia as the tube may injure the trachea



Special Tests:

- Berry's sign:



- **Kocker's test:** Slight compression on lateral lobes produce stridor so may be Tracheomalacia

- Pemberton's sign?

- reversible S.V.C obstruction produced by retrosternal goitre obstructing the thoracic inlet
- Technique → patient elevates the arm above the level of the head if nothing happened after 3 minutes test is considered – ve, it is considered +ve when facial plethora (blue or pink effusion of the neck and/or the face due to venous obstruction)

Percussion: → direct over the manubrium (retrosternal goitre).

Auscultation:

Over the apex of the lateral lobes for machinery bruit → thyrotoxicosis.

Special Investigations

Laboratory Investigations:

Hb%, urine and stool analysis, blood sugar, blood urea.

Radiological Investigations: plain X-ray, CT scan, Thyroid Scan.

Thyroid Function Tests: T3, T4, TSH.

Provisional Diagnosis

Anatomical: a thyroid swelling (site. Moves with deglutition & butterfly in shape).

Pathological: nodular, neoplasticetc.

Functional:

Hyper, hypo or euthyroid.

E.g. A case of thyroid swelling most probably Due to simple nodular goitre with euthyroid state.

Questions & Answers

Oral Discussion:

- 1- What is your diagnosis? & Why?
- 2- What are the investigations?
- 3- What are the painful thyroid swellings?
- 4- What is the TTT of simple nodular goitre?
- 5- What are the differences between 1ry & 2ry toxic goitre?
- 6- What are eye manifestations of toxic goitre?
- 7- What is the TTT of 1ry toxic goitre?
- 8- What is the TTT of 2ry toxic goitre?
- 9- What are the preparations before operation?
- 10- What are the causes of solitary thyroid nodule?
- 11- Why thyroid moves up with deglutition?
- 12- Why retrosternal goitre is common in males?

❖ Embryological Considerations:-

Q. What do you know about thyroid embryology?

A.

- It starts at 24 days and is completed at 7 weeks.
- it is a composite from 2 embryological origins
 1. The floor of the pharynx:
 - Between the 1st and 2nd pharyngeal pouches which is marked by foramen caecum of the tongue.
 - This forms the thyroglossal duct which is displaced forward by the Hyoid bone and to one side, usually the left.
 - The duct forms the isthmus and the two lateral lobes.
 - The thyroglossal duct disappears and if persists thyroglossal cyst will be formed but not thyroglossal fistula which is usually acquired condition
 2. The Ultimobranchial body:
 - The name suggests that this body arises from the fifth pharyngeal pouch, but the 5th pharyngeal pouch is rudimentary.
 - It is described as the ventral portion of the fourth pharyngeal pouch which is invaded by the neural crest which will forms the C cells.

❖ Anatomical Considerations:

Q. Where is the anatomical site of the thyroid gland in the neck?

A.

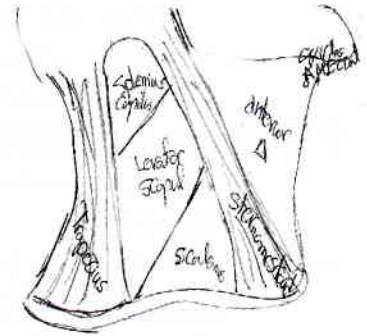
It is in the muscular triangle of the neck.

Q. Mention what you know about triangles of the neck?

A.

Triangles of the neck

Each side of the neck is divided into anterior & posterior triangles by the sternomastoid muscle.



❖ Posterior triangle:

- Boundaries:

1. Posterior border of sternomastoid muscle.
2. The clavicle.
3. Anterior border of trapezius muscle

- Roof:

1. Skin.
2. Superficial fascia (contain platysma, E.J.V & cutaneous nerves).
3. Deep fascia (investing layer of deep cervical fascia).

- Floor:

- Muscles: splenius capitis, levator scapulae & scalenus muscles (posterior, medius, & anterior).

- Fascia: prevertebral fascia.

- Contents:

- 1- Inferior belly of omohyoid muscle.

- 2-Arteries:

1. 3rd part of subclavian artery.
2. Transverse cervical artery.
3. Suprascapular artery.

- 3-Veins:

1. Subclavian vein.
2. Transverse cervical vein
3. Suprascapular vein.

- 4-Nerves:

1. Accessory n.
2. Cervical plexus, ansa cervicalis, & phrenic nerve).
3. Brachial plexus (roots & trunks).

- 5- Lymph nodes:

Supraclavicular L.Ns.

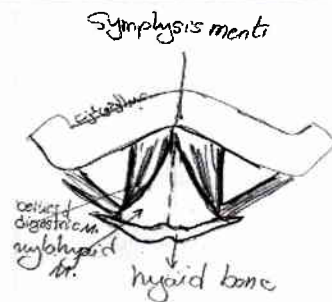
❖ Anterior triangle:

• Boundaries:

- Anterior border of sternomastoid muscle.
- Lower border of the mandible.
- The midline.

• Subdivision:

- 1/2 of submental triangle.
- Muscular triangle.
- Carotid triangle.
- Digastric triangle.



❖ Submental triangle:

Apex: symphysis menti.

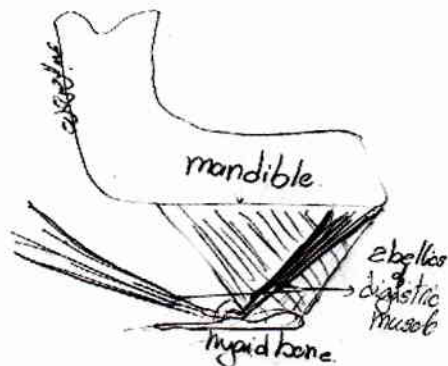
Borders:

Anterior bellies of digastric muscles.

Base: hyoid bone.

Floor: mylohyoid muscle.

Contents: submental lymph nodes.



❖ Digastric triangle:

Boundaries:

1. Lower border of the mandible above.
2. Two bellies of digastric muscles
3. Stylohyoid muscle below.

Floor:

1. Mylohyoid muscle in front.
2. Hyoglossus muscle behind.

Contents:

1. Submandibular gland.
2. Facial artery.
3. Hypoglossal nerve.

❖ Muscular triangle:

Boundaries:

1. Sternomastoid muscle,
2. Superior belly of omohyoid muscle
3. The midline.

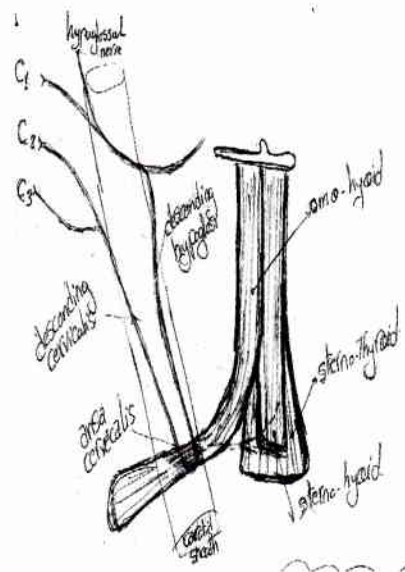
Contents:

1. Strap muscles.
2. Thyroid.

❖ Carotid triangle:

Boundaries:

1. Sternomastoid muscle.
2. Posterior belly of digastric muscle.
3. Superior belly of omohyoid muscle.



Contents:

1. Descending hypoglossi.
2. Descending cervicalis.
3. Carotid sheath (ansa cervicales in the front & sympathetic chain behind).
4. Most of ECA branches.

Q. Mention what you know about deep fascia of the neck?

A:

Deep fascia of the neck

❖ Pretracheal Facia:

- Attachment

- **Above :-**

- To hyoid bone.
 - Oblique line on thyroid cartilage.

- **Below :-**

- Fibrous pericardium.
 - Aortic arch.

- **On each side**

- Fuses with carotid sheath.
 - It splits to form a capsule around thyroid gland, this capsule is thicker anteriorly.

N.B: What are the thick parts of the pretracheal fascia?

- The posteromedial part which is called ligament of Berry, other unpopular name lateral ligament of the thyroid gland
- Anterior part of the fascia, (that is why the gland enlarges post. At first).

❖ Investing Deep Fascia:

- It forms a layer in the anterior & posterior triangles of the neck
- **Inferior**
 - It splits to be attached to manubrium sterni & clavicle.
- **Superior**
 - It is attached to mandible, mastoid process & base of the skull.
 - Splits to form capsule around the parotid gland which is incomplete superiorly.

Surgical importance: Tumor of the parotid elevates the ear

- **Posterior**

- It comes from ligamentum nuchae (interspinous ligament)
 - The fascia splits to surround the sternomastoid & trapezius.

- Anterior

- It joins its fellow in the midline

- ❖ Carotid Sheath:

- It is a tube of deep fascia extending from the base of the skull down to the root of the neck.

- Surrounds the Following Structures:

- 1) Internal Jugular vein: laterally.
- 2) Common carotid and internal carotid arteries (not the external): medially.
- 3) Vagus nerve: behind the interval between the internal jugular vein and common carotid artery.

- Structures Embedded in Its Walls:

1. Sympathetic trunk: embedded in the posterior wall.
2. Ansa cervicalis: embedded in the anterior wall

- Superficial Relations;

- a. Below the upper border of thyroid cartilage ;

- Thyroid gland.
- Infrahyoid muscles (sternohyoid, sternothyroid, omohyoid).
- Sternomastoid muscle.

- b. Above the upper border of thyroid cartilage :

- Styloid apparatus.
- Posterior belly of digastric.
- Parotid gland.

- Deep Relations:

- Transverse processes of all cervical vertebrae and the covering prevertebral muscles.
- Inferior thyroid artery: crosses deep to it at C. 6 (on both sides).
- Thoracic duct: crosses deep to it at C 7 (on left side).

Blood Supply of the Thyroid Gland

A. Arterial Supply:

- Superior thyroid:

- Branch from the external carotid artery.
- It is related to the external laryngeal nerve.
- When the nerve injured it leads to loss of high pitched voice (& voice fatigue).
- It has to be ligated within the upper pole of the gland to avoid injury of the external laryngeal nerve.

- **Inferior thyroid:**

- Arises from the thyrocervical trunk which is a branch of the first part of the subclavian artery.
- Its terminal branches near the gland are in close relation to the recurrent laryngeal nerve (in between, above, below terminal branches).
- We ligate the artery away from the gland while it passes behind the carotid sheath.
- It is ligated in continuity i.e. ligated and not divided to avoid haemothorax if slipped ligature occurs.
- Another opinion to ligate the branches of the artery after identification of the recurrent laryngeal nerve ligating the branches of the thyroid gland and preserving the branches of the parathyroid gland
- Most of the authors believe that bilateral ligation of the inferior thyroid artery doesn't affect blood supply of parathyroid gland.

- **Thyroidea ima artery**

- Might be found from the aorta or the innominate artery as these arteries arise from the 4th branchial arch as the thyroid gland in the neck then descends to the chest

- **Accessory tracheal & esophageal arteries.**

- They run in ligament of Berry which is thickened part of pretracheal fascia which join trachea to thyroid gland.
- The postromedial part of the thyroid lobe is left after subtotal Thyroidectomy and it has its blood supply from these vessels

B. Venous drainage

- **Superior thyroid v.**

- To the internal jugular vein.

- **Middle thyroid v.**

- To the internal jugular v.
- Middle thyroid v. is the shortest v. so it should be the first vein to be ligated and divided).
- It is nearer to the lower pole of the thyroid gland
- It may be multiple or may be absent
- If the vein is torn before ligation, bleeding and air embolism may occur

- **Inferior thyroid veins**

- Join the left innominate vein.

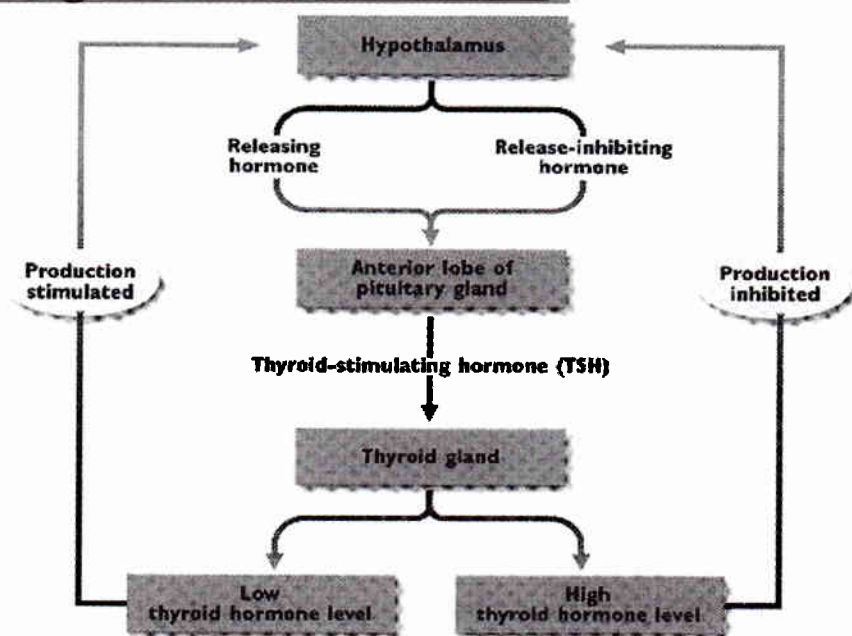
- **Accessory tracheal & esophageal branches.**

Q. Why recurrent laryngeal nerve hooks around the aortic arch in the left side and right subclavian artery in the right side?

A.

- Because these vessels are formed in the neck from the 4th branchial arch which forms the aorta in the left side and subclavian in the right side
- If there is failure of formation of the right subclavian artery, the right recurrent laryngeal nerve will be non recurrent laryngeal nerve, and it will pass from the vagus to the larynx directly.
- This non recurrent laryngeal nerve may be injured during ligation of the middle thyroid vein.
- Patients with non recurrent laryngeal nerve may have dysphagia lusoria

❖ **Physiological Considerations:**



Physiological Function of the Thyroid Hormone:

- ↑O₂ consumption
- ↑Energy production in all tissues
- ↑glucose consumption by the cell
- Enhance protein catabolism
- Lower serum cholesterol level
- Sensitize the heart to circulating catecholamines
- Stimulate physiological, mental and sexual growth.

Q. What are the organs which take Iodine from the blood?

A.

- Active (with a pump)
 - Thyroid
- Passive :
 - Breast - Salivary gland
 - Stomach - Kidney

Q. What are painful thyroid diseases?

A.

- Hge in a cyst of SNG (commonest cause)
- Acute thyroiditis (rare)
- Malignancy → late, referred to ear through Arnold nerve

Case 1. Simple Nodular Goitre

Q. What is meaning of goitre?

A.

Goitre from the Latin word (gutter = throat)

Q. What is the diagnosis?

A.

Simple nodular goitre not complicated.

Q. Why do you diagnose this swelling as goitre?

A.

This swelling is goitre because it is a swelling,

- 1.no past history of thyroid ds
- 2.nodular surface
- 3.In the lower part of the front of the neck deep to the sternomastoid (which is the anatomical site of the thyroid gland)
- 4.Taking the shape of the thyroid gland (butterfly in shape),
- 5.It moves up and down with deglutition.

Q Why you diagnose this case as simple goitre?

A.

As there are no manifestations suggestive of thyrotoxicosis, no manifestations suggestive of malignancy and no manifestations suggestive of inflammation.

Q What is the cause of up and down movement of goitre with deglutition?

A.

- The cause of this movement is the presence of the thyroid gland within the pretracheal fascia which is attached to the thyroid cartilage and hyoid bones.
- When the digastric muscle contracts it pulls the hyoid bone upward which pulls the thyroid cartilage which pulls the pretracheal fascia with its contents

Q. Is the trachea considered to be one of the contents of the pretracheal fascia?

A.

No, the trachea is pretracheal

Q. What are swellings which move up and down with deglutition?

A.

- Thyroid → thyroglossal cyst, ectopic thyroid gland, parathyroid gland tumors.
- Larynx → prelaryngeal L.N., laryngocoele, cold abscess of the larynx.
- Trachea → pretracheal L.N., tracheocoele.
- Subhyoid bursitis.

Q. How is the thyroid gland descended after deglutition ?

A.

By the contraction of strap muscles (sternohyoid, sternothyroid, omohyoid)

Q. When does the goitre lose the up and down with deglutition?

A.

In the following conditions:

- a. Huge goitre,
- b. Malignant goitre
- c. Retrosternal goitre.

Q. Mention the nerve supply of digastric muscle and strap muscles.

A.

Digastric muscle:

- Posterior belly: branch from facial nerve.
- Anterior belly: trigeminal n. via mylohyoid nerve.

Strap muscles (sternohyoid, sternothyroid, omohyoid)

- Ansa cervicalis (C₁, 2, 3)
 - C₁ (Descending hypoglossi) from hypoglossal nerve
 - C_{2,3} (Descending cervicalis)

Q. What are the differentiating points between solitary nodule in the isthmus and thyroglossal cyst?

A.
The thyroglossal cyst moves with deglutition and protrusion of the tongue, while solitary nodule moves with deglutition only.

Q. What is the commonest complication of thyroglossal cyst and why?

A.
Infection is the commonest complication and this is because the cyst is rich in lymphatics from the neck

Q. What do you know about thyroglossal fistula?

A.
It is one of the complications of thyroglossal cyst.
It is acquired, never congenital.
Occurs either due to:
1- Infection and spontaneous rupture.
2- Drainage of infected cyst.
3- Inadequate excision of the cyst
Clinically:

- It is an opening in the midline of the neck or near to the midline.
- Above it crescent of skin which increases with deglutition
- Moves upward with deglutition.
- It may discharge viscid fluid or pus.

Q What are the clinical features of thyrotoxicosis?

A.
I- From history:
Palpitation, nervousness, irritability, intolerance to hot weather, ↑ appetite associated with loss of weight, polyuria and menorrhagia
II- From general examination:
Tachycardia, arrhythmia, tremors, eye signs of thyrotoxicosis (lid lag, staring look, exophthalmos, scleral show...)
III- From local examination:
Dilated veins, expansile pulsations, warmth, palpable thrill and audible bruit

Q. What are the clinical signs you know considered to be investigations ?

A.

- Sleeping pulse
 - mild → 80 -90
 - moderate → 90 -100
 - severe → <100
- Tendon jerk

Q. What are the manifestations that make you suspect an inflammatory goitre?

A.

- ❖ **In acute and subacute thyroiditis:** short duration, pain, may be fever (with or without rigors), warmth and tenderness over the gland.
- ❖ **In Hashimoto thyroiditis:** Locally the gland is very similar to S.N.G. but the course of the disease is characteristic; early thyrotoxicosis followed by hypothyroidism.

NB: in Hashitoxicosis there is decreased uptake of Iodine, but in true thyrotoxicosis there is increased uptake of Iodine

- ❖ **In Riedle thyroiditis:** The gland is irregularly enlarged, hard, fixed to skin, trachea & sternomastoid i.e. very similar to anaplastic carcinoma of the thyroid.

Q. Mention what do you know about the etiology of simple nodular goitre?

A.

- Repeated fluctuations of TSH levels (due to repeated cycles of stress) producing mixed patterns within the glands, with areas of active follicles and others with inactive follicles
- As a result of recurrent hyperplasia and hypervascularity, hemorrhage may occur producing necrotic nodules
- Repetition of hyperplasia and involution results in nodular Goitre, most nodules are inactive and the active follicles are present in inter-nodular tissue.

Q. Mention the causes of iodine deficiency?

A.

- a. Decreased intake as in endemic areas,
- b. Increased demands as in periods of stress in females (puberty, pregnancy, lactation)
- c. Decreased absorption from the G.I.T.

Q. What are the causes of defective synthesis of thyroid hormones?

A.

- a. Enzymatic deficiency, and
- b. Goitrogens (Cabbage, P.A.S., antithyroid drugs and iodides in large amounts "iodide goitre").

Q. What do you know Pendred's syndrome?

A.

It is inborn error of iodine metabolism due to peroxidase enzyme deficiency within the gland and in which there is goitre (cretinoid goitre) / deafness / dwarfism / mental deterioration.

Q. Mention the types of simple goitre you know?

A.

a. Simple diffuse goitre:

I- Parenchymatous:

- Physiological goitre. - Endemic goitre.
- Sporadic.

II- Colloid goitre:

b. Nodular goitre: simple multinodular goitre

Q. Which of these types is reversible?

A.

Endemic goitre can be reversible if the cause of iodine deficiency is eliminated.

Q. What is the cause of the increased female predominance of physiological goitre?

A:

The cause is pregnancy, lactation which increase the body need of iodine and also some authors believe that there is estrogen receptor in the thyroid of the females

Q. What is the cause of colloid goitre?

A.

It is a late stage of diffuse hyperplasia when TSH stimulation has fallen off and when many follicles are inactive and full of colloid as patient may receive large doses of iodine □ it will inhibit TSH and protease □ hyper-involution of the gland.

Q. Mention the complications of simple nodular goitre?

A.

- a. Pressure on surrounding structures (dyspnoea and dysphagia),
- b. Disfigurement,
- c. 2ry toxic goitre (20%),
- d. Malignant transformation (1-2%), {Follicular carcinoma}
- e. Hemorrhage in a cyst (considered an emergency)
- f. Infection (very rare)
- g. Retrosternal extension.

Q. What are the pressure symptoms of goitre?

A.

- Pressure on trachea → dyspnea .
- Pressure on the esophagus → dysphagia
- Pressure on recurrent laryngeal nerve → hoarseness of voice
- Pressure on carotids → fainting attacks
- Pressure on internal jugular → black outs which increase on leaning forward
- Pressure on sympathetic chain → Horner syndrome

Q. What is the type of dyspnoea caused by pressure on the trachea?

A.

It is a postural dyspnoea i.e. related to position. When the patient lies down, he gets difficulty in respiration or he may feel suffocation.

Q. Mention how goitre cause dyspnea by different mechanisms?

A.

- a. Postural dyspnoea due pressure by the goitre on the trachea.
- b. Exertional dyspnoea in toxic goitre complicated by heart failure
- c. Haemorrhage in a cyst sudden compression on trachea → reflex spasm of pretracheal muscles acute respiratory obstruction.

Q. What is the presentation of haemorrhage in a cyst? and what is the mechanism?

A.

It present by Sudden onset of dyspnoea which precipitated by cough or shout. The mechanism is sudden enlargement of the gland lead to reflex spasm of pretracheal muscles from pain.

Q. What is the management of this patient?

A.

Emergency needle aspiration or even emergent subtotal thyroidectomy .

Q. What are the investigations of simple nodular goitre?

A.

In addition to the routine laboratory investigations, we do thyroid function tests:

1. Estimation of serum level of T_3 , T_4 (Total or free) , T.S.H. & Thyroid antibodies (if we suspect Hashimoto thyroiditis).
2. U/S very sensitive to detect nodules about 4 mm.
3. Thyroid scanning by radioactive iodine recently it is done in toxic goitre only.
4. FNABC

Q. What do you prefer the serum level of total or free thyroid hormones? And why?

A.

The serum level of free T_3 and T_4 is more preferable than serum level of total. And this is because serum level of total T_3 and T_4 is bound to plasma protein so it is liable to fallacies by change of plasma protein.

Q. What will be the results of thyroid hormone level in S.N.G?

A.

Thyroid hormone level will be normal in S.N.G.

Q. What is the treatment of this patient who suffers from S.N.G.?

A.

Most patients with multi nodular goiter are asymptomatic and do not need operation.

- ❖ Partial thyroidectomy [if one lobe is more significantly involved than the other , total lobectomy on the more affected side with either subtotal resection or no intervention on the less affected side (Dunhill procedure)].
- ❖ Subtotal thyroidectomy is done to preserve a part of the gland on both sides equal one lobe for secretion of thyroxine.
- ❖ Total thyroidectomy + replacement therapy
- ❖ Recently: alcohol injection in large nodules causes their necrosis and reduction of the size of the gland.

Q. What is the aim of partial thyroidectomy in TTT of S.N.G?

A.

The aim is removal of the nodular parts leaving an equivalent of 8 gm of relatively normal thyroid tissue (size of normal lobe) on each side.

N.B. we preserve posteromedial part to avoid injury of RLN and parathyroid gland & to preserve part of the gland for secretion of thyroxine.

Q. What are the complications of subtotal thyroidectomy for S.N.G.?

A.

A. Complications of thyroidectomy:

A. Operative complications:

1. Complications of anaesthesia.
2. Shock.
3. Hemorrhage: primary.
4. Injury of important structures:
 1. External laryngeal nerve → loss of high pitched voice (see before)
 2. Recurrent laryngeal nerve → may be partial or complete, unilateral or bilateral.
 - Complete unilateral → hoarseness of voice
 - Complete bilateral → aphonia
 - Partial unilateral → dyspnea on extension
 - Partial bilateral → stridor
 3. Trachea.
 4. Esophagus.

B. Post-operative complications:

I. Early complications:

1. Hemorrhage:

i. Reactionary hemorrhage:

- Due to Slippage of superior thyroid a. ligature (tension hematoma)
- The hematoma may compress trachea or carotid vessels.
- Treatment → emergency removal of sutures of skin and deep fascia (in bed) → return to operative room.

2. Secondary hemorrhage.

2. Infection.

3. Pulmonary complications: DVT – pulmonary embolism.

2. Late complications:

1. Hypothyroidism: (20 : 40% of cases)

2. Hypo-parathyroidism (in less than 0.5% of cases) → Tetany

- First → Circum-oral numbness
- Then → carpo-pedal spasm & laryngismus stridulous.
- It may be due to: removal or devascularization or parathyroid glands.

3. Keloid scar: if incision overlies the sternum & managed by local steroid injection.

Q. What is the danger of haematoma after thyroidectomy?

A.

- It can lead to suffocation as it is enclosed within the pretracheal muscles.

Q. Mention the different causes of dyspnea after thyroidectomy ?

A

- a. Tension hematoma in deep cervical fascia.
- b. Laryngeal edema due to trauma by endotracheal tube or secondary to extensive manipulation of larynx during surgery.
- c. Bilateral recurrent laryngeal nerve injury.
- d. Tracheomalacia (lead to tracheal collapse)

Q. What is meant by tracheomalacia and what is the cause?

A.

- Tracheomalacia is softening of the rigid tracheal rings causing loss of self-retained patency of the trachea.
- The cause is large goitre → ischemia and pressure necrosis of cartilaginous rings of the trachea (this appears after operation when the patient develops stridor)

Q. What type of radioactive iodine is used in thyroid scanning?

- A.
- I^{123} as it has a half life of 13 hours, but expensive and unstable as opposed to 8 days of I^{131} .

Q. What is the dose of radioactive iodine used in thyroid scanning?

- A.
- 5 uCi (5 micro Curi)

Q. Do you know another radioactive substance that may be used in scanning?

- A.
- Yes, Technetium⁹⁹ it is more safe and cheap.

Q. What are the manifestations of external laryngeal nerve & recurrent laryngeal nerves injury?

- A.
- External laryngeal n. injury → Loss of high pitched voice due to paralysis of cricothyroid muscle
 - Unilateral RLN injury → hoarseness of voice which is improved by time due to compensatory crossing of the contralateral cord to the other side.
 - Bilateral RLN injury → suffocation which should be treated at once by immediate tracheostomy.

Q. What long term treatment do you prescribe to the patient postoperatively? And why?

- A.
- I must advise the patient to take L thyroxine (Eltroxin) for life. To avoid recurrence.

Q: Why recurrence occurs if the patient after surgery doesn't have eltroxin for life?

- A.
- After surgery, the residual part of the thyroid gland secretes an amount of thyroxine less than normal. The low level of circulating thyroid hormones stimulates the secretion of T.S.H. (feed back mechanism). Increased T.S.H. secretion stimulates the thyroid gland which gets enlarged.

Q. What is the dose to be given?

- A.
- 0.1 - 0.2 mg/day.

Q. How do you adjust the dose of the drug?

- A.
- By follow up estimation of 1) the pulse and 2) serum thyroid hormones.

Q. What is histopathological surprise?

A.

❖ **Definition:**

- Accidentally discovered malignancy from histopathological report of a removed benign thyroid lump

❖ **Treatment**

- If follicular carcinoma: completion of thyroidectomy (re-operation to remove the remaining thyroid tissues to facilitate radioactive iodine scanning and destruction of any metastatic foci)
- If papillary carcinoma → re-operation with total thyroidectomy as the tumor is multicentric and excision of juxta-thyroid LN

Browse's introduction to the symptoms & signs of surgical disease/ Ch 11 the neck/ thyroid p295-296

Case 2: TOXIC GOITRE

Q. What is your diagnosis?

A1.

Toxic diffuse goitre (1ry toxic goitre)

A2.

Toxic nodular goitre (2ry toxic goitre)

Q. Why this is a case of goitre?

A.

patient is young age, with true exophthalmus, past history of thyroid ds

This is because the presence of a swelling with the following characters:

1. Site: in the lower part of the front of the neck deep to the sternomastoid (which is the anatomical site of the thyroid gland)
2. Shape: which is the shape of the thyroid gland (butterfly in shape),
3. Movement: moves up and down with deglutition.
4. Disturbance of function of the thyroid gland in the form of thyrotoxicosis.

Q. What are the toxic manifestations you find?

A.

The toxic manifestations are the following:

- ❖ From history: Palpitation, nervousness, irritability, intolerance to hot weather, loss of weight inspite of good appetite, polyuria, menorrhagia
- ❖ From general examination: Tachycardia, arrhythmia, tremors, eye signs of thyrotoxicosis
- ❖ From local examination: Dilated veins, expansile pulsations, warmth, palpable thrill, audible bruit...

Q. Mention the causes of weight loss in spite of good appetite?

A.

1. Thyrotoxicosis
2. Diabetes Mellitus
3. Parasitic infestation
4. Malabsorption syndrome

Q. Explain the mechanisms of polyuria in toxic goitre?

A.

1. Increased COP $\rightarrow$ $\uparrow$ renal blood flow $\rightarrow$ $\uparrow$ GFR
2. Secondary DM $\rightarrow$ glucosuria.
3. $\uparrow$ intake of water try to polyphagia
4. $\uparrow$ Metabolic rate.

Q. How to differentiate between primary and secondary toxic goitre?

A.

	Toxic Diffuse Goitre (1ry)	Toxic Nodular Goitre (2ry)
Age	Usually young adult (20-30)	Usually elderly (40-50)
Onset	• Thyrotoxicosis and Goitre start simultaneously. • May be sudden onset.	• Thyrotoxicosis occurs on top of a nodular goitre. • Gradual onset.
Course	• Intermittent (remissions & exacerbations)	• No remissions
Degree of toxicity	++++	+
Metabolic manifestations	++++	+
Nervous manifestations	++++	+
CVS manifestations	+	++++
Eye manifestations	++++	+
True manifestations	Usually present	-
Pretibial myxoedema	May be present	-
Local examination = Goitre	• Slight enlargement. • Smooth surface. • symmetrical	• Moderate or marked enlargement. • Nodular surface. • Asymmetrical.

Q. What are the most important thyrotoxic symptoms & signs?

A.

Symptoms:

- Loss of weight in spite of good appetite, intolerance to hot weather, and palpitation.

Signs:

- Tachycardia, arrhythmias, and eye signs of thyrotoxicosis.

Q. What are the eye signs of thyrotoxicosis?

A.

A- Exophthalmos which may be:

- 1- False (apparent)
- 2- True (actual)

Which are differentiated by Nafizigar method, Frazer's method, Ruler method.

B- Signs of true exophthalmos:

1. Stellwag's sign: Infrequent blinking (staring look)
2. Dalrymple's signs: Apparent rim of sclera above the cornea.
3. Von Graefe's sign: Lid lag the upper lid does not follow the eyeball on looking downwards.
4. Joffroy's sign: Absence of forehead corrugation on looking upwards
5. Mobius sign: Absence of convergence on looking to a near object
6. Rosenbach's sign: tremors of the eyelids.
7. Topolansky's sign: congestion of the pericorneal region of the eye
8. Jellinek's sign: brownish pigmentation of the eyelid , especially upper lid

C- Degree of exophthalmos: by

- 1- Exophthalmometer.
- 2- Ruler.

Q. Are the eye signs always bilateral?

A. No

Q. What is the exophthalmos and what is proptosis?

A.

- Exophthalmos → protrusion of the eyeball due to thyroid disease.
- Proptosis → protrusion of the eyeball also but due to diseases other than thyroid disease.

Q. Mention the pathogenesis of each of these eye signs?

- A.**
- True exophthalmos is due to exophthalmos producing substance which causes deposition of oedema fluid and round cell infiltration in the retro-orbital space.
 - Infrequent blinking, apparent rim of sclera above cornea, lid lag & apparent exophthalmos are all due to upper eyelid retraction caused by spasm of Muller's muscle (thyroxine makes this muscle oversensitized to the effect of circulating catecholamines)
 - Absence of forehead corrugation is caused by true exophthalmos Myopathy of occipitofrontalis.
 - Absence of convergence on looking to a near object is due to paresis of medial recti muscles which are responsible for adduction of the eye globes

Q. Mention the types of toxic goitre you know?

- A.**
- There are three types of toxic goitre
- 1) Toxic (diffuse goitre (1ry toxic goitre) (Grave's disease)
 - 2) Toxic nodular goitre (2ry toxic goitre) (Plummer's disease)
 - 3) Toxic nodule.

Q. Are the above three types the only causes of thyrotoxicosis?

- A.**
- No. there are rare causes of thyrotoxicosis:
1. Thyrotoxicosis factitia : Due to intake of thyroxine (e.g. for weight reduction)
 2. Infantile thyrotoxicosis: A baby born to a thyrotoxic mother
 3. Jaded Basedow disease: Due to high intake of iodides in a colloid goitre
 4. De Quervain thyroiditis (in some cases)
 5. Hashimoto thyroiditis (in early cases) only in 5% of cases.
 6. Some tumors secrete thyroxine eg. struma ovarii.

Q. What is the cause of 1ry thyrotoxicosis?

- A.**
- Thyroid stimulating antibodies (Ts Ab) e.g. Long Acting Thyroid Stimulator (LATS), (LATSP) {i.e. it is an Autoimmune disease}.

Q. What is the cause of 2ry thyrotoxicosis?

- A.**
- It occurs on top of simple nodular goitre. Hyperactivity is either present in the nodules themselves or in the internodular tissue due to autonomous activity or stimulated by Ts Ab.

Q. Mention the types of autoimmune thyroiditis ?

A.

- Non goiterous (Iry myxoedema)
- Goiterous (Iry thyrotoxicosis , hashimoto)

Q. What is the evidence that Iry thyrotoxicosis is an autoimmune disease?

A.

- a. Ts Ab are present in 80% of thyrotoxic patients;
- b. Lymphocytic infiltration of the thyroid gland;
- c. Enlargement of other members of RES e.g. thymus, spleen, L.N.

Q. What are the investigations that should be done for this patient?

A.

- 1- The routine laboratory investigations.
- 2- Thyroid function tests.

Q. What are the lines of treatment of a case of diffuse toxic goitre?

A.

The lines of treatment of toxic diffuse goitre are :

- 1- Medical treatment: which is the main line.
- 2- Surgical treatment.
- 3- Radioactive iodine.

Q. What are the lines of medical treatment?

A.

- | | |
|-----------------------|---------------------------------|
| 1- Rest. | 4- Beta blockers as propranolol |
| 2- Sedation. | 5- antithyroid drugs. |
| 3- High protein diet. | |

Q. What is the mechanism of action of neomercazole ?

A.

- a. Prevents oxidation of inorganic iodine
- b. Prevents coupling of iodine with tyrosine
- c. Immunosuppressive action on Ts Ab production.

Q. What is the dose of neomercazole ?

A.

The starting dose is 10 mg 3 times /day and this is continued until the patient becomes euthyroid then we give 5 mg 3 times per day as a maintenance dose.

Q. What is the duration that you give neomercazole for the treatment of Iry toxic goitre?

A.

It is given for 12-18 months.

Q. What is the reason of this long duration?

A.

As the course of primary thyrotoxicosis is (remission and exacerbation) we give neomercazole for this long duration waiting for spontaneous remission.

Q. Do you know other technique in medical treatment?

A. Block and replacement therapy

Q. Mention the disadvantages of antithyroid drugs?

A.

1. Failure rate 50%.
2. Some goiters enlarge.
3. Drug toxicity (Aplastic anemia and agranulocytosis).
4. Prolonged drug therapy.

Q. What is the point of view of the surgeons who give thyroxine with anti-thyroid drugs in treatment of toxic goitre?

A.

They claim that antithyroid drugs cause secondary rapid enlargement of the thyroid gland as they decrease serum level of T_3 and T_4 which in turn $\rightarrow \uparrow$ TSH level and this is dangerous in retrosternal goitre and Thiouracil transmitted goitre.

Q. why thyroid swelling may be enlarged, however surgeons give thyroxine?

A. Due to TSH receptor antibodies.

Q. What is the mechanism of action of propranolol?

A.

- a. It blocks the peripheral adrenergic actions of thyroxine especially on the heart.
- b. It inhibits the peripheral conversion of T_4 to T_3 .

Q. Mention the indications of surgical treatment in a case of primary thyrotoxicosis?

A.

Indications are:

- a. Failure of medical treatment.
- b. Recurrence of symptoms after successful medical treatment.
- c. Large size of the gland.
- d. Retrosternal toxic goitre.
- e. Severe case from the start: pulse > 120 / min as this patient will not go into spontaneous remissions.

Q. Mention the indications of radio-iodine in true thyrotoxicosis?

A.
Radio-iodine can be used as an alternative to medical treatment in patients > 45 years of age.

Q. What is the treatment of a case of toxic goitre associated with true exophthalmos?

A.

- ❖ Exophthalmos producing substance (EPS) is thought to be secreted from the anterior pituitary and its secretion is related to the secretion of T. S.H.
- ❖ Therefore, if thyrotoxicosis is terminated abruptly (by surgery or radio-iodine), the rapid decrease in blood level of thyroxine will induce a rapid and marked increase in T.S.H. secretion and subsequently a rapid and marked increase in the secretion of exophthalmos producing substance thus leading to malignant exophthalmos.
- ❖ The ideal treatment is to control thyrotoxicosis gradually by antithyroid drugs and we add small dose of thyroxine until exophthalmos is static for 6 months.

Q. What is the treatment of a case of secondary thyrotoxicosis?

The treatment is subtotal thyroidectomy (main line of treatment).

Q. What is the aim of subtotal thyroidectomy operation in thyrotoxicosis?

A.
In subtotal thyroidectomy we remove both lobes + isthmus, leaving postromedial parts of lobes on each side to protect recurrent laryngeal nerve & parathyroid gland
We leave about 4-5 gm of thyroid tissue on each side; so the total amount on both sides equal one normal lobe.

Q. What about the preparation of thyrotoxic patient for surgery?

A.

- We give
 - Antithyroid drugs e.g. Neomercazole
 - Propranolol (Inderal) for regulation of heart rate,
Until the patient is euthyroid then we add Lugol's Iodine 15 oral drops tds for 14 days before operation to make the gland less vascular and firm.

Q. What is the most common diagnostic investigation?

A.

- Radioactive iodine.

Q. What is the value of oral examination in thyroid disease?

A.

- Associated inflammation "thyroiditis".
- Indirect laryngoscopy.
- Tongue.
- Thyroglossal ectopic thyroid.

Q. What is the most important preoperative preparation?

A.

- Indirect laryngoscopy.

Q. What are the contraindications of antithyroid drugs in preoperative preparation of toxic goitre and why?

A.

In retrosternal goitre because antithyroid drugs cause enlargement of the thyroid gland and this enlargement may cause pressure manifestations e.g. mediastinal syndrome.

Q. What is the composition of Lugol's iodine?

A.

It is composed of 5% iodine and 10% KI (potassium iodide) in water.

Q. How does Lugol's iodine make the gland less vascular and firm?

A.

- It inhibits TSH and protease enzyme so the colloid accumulates in the follicles, which become distended and compress the surrounding blood vessels.
- So the gland becomes firmer and less vascular.

NB:

- It reaches the maximum effect after 10-14 days then decline, so it should be used during the last 10-14 days prior to surgery.
- If used for more than 14 days, rebound hyperemia of the gland occurs
- It is used once for life.

Q. What are the advantages of surgical treatment?

A.

- The advantages are:
 - Rapid cure of the patient
 - Avoid side effects of the drugs e.g. side effects of neomercazole.

Q. What are the complications of subtotal thyroidectomy for toxic goitre?

A.

A. Operative complications:

1. Complications of anaesthesia.
2. Shock.
3. Hemorrhage: primary.
4. Injury of important structures:

1. **External laryngeal nerve** → loss of high pitched voice (see before)
2. **Recurrent laryngeal nerve** → may be partial or complete, unilateral or bilateral.
3. **Trachea.**
4. **Esophagus.**

B. Post-operative complications:

I. Early complications:

1. Hemorrhage:

a. Reactionary hemorrhage:

- Due to Slippage of superior thyroid a. ligature.
- The hematoma may compress trachea or carotid vessels.
- Treatment → emergency removal of sutures of skin and deep fascia (in bed) → return to operative room.

b. Secondary hemorrhage.

2. Infection.

3. Pulmonary complications: DVT – pulmonary embolism.

2. Late complications:

1. Hypothyroidism: (20 : 40% of cases)

- Rarely due to extensive removal of thyroid tissue but commonly due to alternation of autoimmune process leading to destruction of thyroid tissue.
- Treated by L-thyroxin

2. Recurrent thyrotoxicosis: in less than 5% of cases usually due to inadequate removal.

3. Thyrotoxic crisis (thyroid storm):

- It is life threatening of hyper-acute hyperthyroidism.

4. Hypo-parathyroidism (in less than 0.5% of cases) → Tetany

- First → Circum-oral numbness
- Then → carpo-pedal spasm & laryngismus stridulous.
- It may be due to: removal or devascularization or parathyroid glands.

5. Keloid scar: if incision overlies the sternum & managed by local steroid injection.

Q. What do you know about thyrotoxic crisis?

A.

- Thyrotoxic crisis is a life-threatening condition of hyperacute hyperthyroidism that may occur post-operatively especially unprepared toxic patient or spontaneously or rarely it may be the first presentation of thyrotoxicosis if the patient is exposed to stress.
- Its clinical manifestations,

It is sympathetic hyperstimulation:

- Hyperpyrexia ($> 40^{\circ}\text{C}$)
- Heart failure
- Hypertension.
- Coma $\rightarrow$ death
- Tachycardia (severe)
- Excessive sweating.
- Irritability & convulsions.

NB. - Severe tachycardia may lead to heart failure
- Hyperpyrexia may lead to brain damage.

▪ Treatment $\rightarrow$ Emergency:

a- Symptomatic

- Cooling of patient: ice packs, antipyretics.
- IV fluids to correct the dehydration.
- O_2 and diuretics for heart failure and digoxin for atrial fibrillation.
- Sedation.

b- Specific treatment:

- o Carbimazole 15-20 mg /6 hours.
- o Lugol's iodine 10 drops / 8 hours or IV drip of K iodide.
- o Propranolol 40 mg/6 hours orally (in deral can be give by IV drip under monitoring.
- o IV hydrocortisone.

Q. What are the hazards if inderal IV shots in thyrotoxic crisis?

A.

- Inderal IV shots can lead to heart block and this is the reason that is we give it in the form of an intravenous drip with simultaneous monitoring of the pulse on E.C.G.

Q. What are other lines of treatment of toxic nodular goitre (2ry toxic goitre)?

A.

- Antithyroid drugs.

Q. When do we use antithyroid drugs in treatment of secondary thyrotoxicosis?

A.

We use antithyroid drugs in the following conditions:

1. Preoperative preparation of patients for surgery.
2. When patient refuse surgery.
3. When there are contraindication for surgery.

Q. Can radio-iodine be used in treatment of toxic nodular goitre?

A.

- Radio-iodine is less effective in treatment of toxic nodular goitre as fibrosis will prevent penetration but it can be used only in high risk patient e.g. heart failure.

Q. What is the treatment of toxic nodule?

A.

- Surgery (hemithyroidectomy) is the main line of treatment.
- Medical treatment is indicated in preoperative preparation, in young patients and in patients refusing or unfit for surgery.
- Radio-iodine can be given to patients over 45 years as an alternative to surgery and radio-iodine will be very effective as the toxic nodule will be the only part that will take the iodine with no risk of hypothyroidism.
- So, radio-iodine is the treatment of choice of toxic nodule if there are no contraindications)

Q. What is the mechanism of action of radio-iodine in treatment of toxic goitre?

A.

1. When radio-iodine is concentrated by the gland will emit **B irradiation**.
2. It destroys the major part of the gland (according to the dose) without affecting the adjacent structures (due to short penetration).
3. It emits **little amount of gamma irradiation**.

Q. Mention the types of radio-iodine and which of them is preferable in treatment of toxic goitre?

A.

^{131}I , ^{132}I , ^{128}I , ^{123}I , ^{131}I is the preferable as it can emit beta rays while ^{123}I can emit only gamma rays which are harmful.

Q. What is the dose of radioactive iodine in the treatment of toxic goitre?

A.

- 10 milli curi iodine ^{131}I , another dose may be given after 3 months if there is no good response.

NB. We use 10 micro curi for isotope scanning.

Q. Mention the disadvantages of radioactive iodine?

A.

1. Over dose → myxedema in 75-80% of cases after 10 years.
2. Need isotope facilities.
3. Difficult to calculate the dose as it is according to the weight of the gland.
4. Low dose → Recurrence.
5. Teratogenic → so not given to pregnant women.
6. Carcinogenic so not given below the age of 45 years (it is proved not carcinogenic for 30 years).
7. Less effect in secondary thyrotoxicosis because fibrosis will prevent penetration.
8. Improvement is expected within 8-12 weeks.
9. Indefinite follow up is essential.
10. Recurrence of toxicity if low dose is given.

Q. When radio-iodine is contraindicated?

A.

In the following conditions:

1. During pregnancy (risk of foetal anomalies and foetal hypothyroidism).
2. During lactation (risk of hypothyroidism to the baby).
3. Young age (risk of inducing thyroid carcinoma).
4. Toxic nodular goitre (ineffective).
5. Iodine allergy.

Q. What is meant by retrosternal goitre?

A.

This is anatomical diagnosis in which the thyroid lies behind the sternum.

Q. What are the types of retrosternal goitre?

A.

Retrosternal goitre is classified into 3 types:

1) **Plunging goitre:**

- Rises with deglutition & then descends again through the thoracic goitre.

2) **Mediastinal goitre:**

- Completely present in the chest but connected with thyroid by narrow band of tissue & take its blood supply from thyroid vessels.

3) Intrathoracic goitre:

- Completely present in the chest & separated from the main gland.
- It arises from ectopic thyroid tissue which takes its blood supply from mediastinal vessels.

Q. What is the pathological nature of retrosternal goitre?

A.

- Retrosternal goitre may be:
 - Simple goitre.
 - Toxic goitre
 - Malignant goitre.

Q. What is the clinical picture of retrosternal goitre?

A.

Symptoms

- May be asymptomatic.
- History of cervical goitre which has disappeared but severe obstructive symptoms present:
 1. Dyspnea, cough & stridor.
 2. Dysphagia.
- Toxic manifestations may be found.

Signs

- **Inspection:** engorgement of neck veins, cyanosis & edema of the face & neck due to compression on innominate veins and dilated veins on chest.
- **Palpation:** the lower border is not felt.
- **Percussion:** dullness over the manubrium sterni.
- **Special tests:** Pemberton's sign: patient elevates the arm above the level of head, it is considered positive when fascial plethora (blue or pink effusion of the neck and/ or the face due to venous obstruction).

Q. Who is affected more by retrosternal goitre?

A.

Retrosternal goitre is more common in males and this is due to strong strap muscles and short neck than females.

Q. What are the DD of shadow in the superior mediastinum?

A.

- | | |
|-------------------------|------------------|
| 1. Retrosternal goitre. | 2- Thymoma. |
| 3- Lymphoma. | 4- Enlarged LNs. |
| aneurysm. | 5- Aortic |

Q. What is the treatment of retrosternal goitre?

A.

Thyroidectomy is the only line of treatment

- Subtotal thyroidectomy from the neck (piece meal) because the vascularity in the neck but if huge or intra-thoracic median sternotomy may be needed.
- If toxic subtotal thyroidectomy after preparation by Inderal is done but not anti thyroid drugs to avoid the increase of the size of the gland.

Special care should be exerted to avoid injury of RLN during delivery of R.S.G

Case 3: Malignant Goitre

Q. What are the suggestive features of malignancy in a goitre?

A.

❖ From history:

Short duration or long duration with recent rapid enlargement, pain referred to the ear, hoarseness of voice, symptoms of distant metastases.

❖ From examination :

Hardness, fixity to the trachea, fixity to sternomastoid, attachment to overlying skin, absent carotid pulse (Berry's sign), enlarged deep cervical lymph nodes, signs of distant metastases.

Q. What is the differential diagnosis of hard thyroid swelling?

A.

Hard thyroid swelling may be:

1. Cancer thyroid
2. Riedle thyroiditis
3. Tense cyst
4. Calcification in simple nodular goitre

Q. When the LNs are enlarged secondary to goitre?

A.

- LNs are enlarged if goitre is:
 1. Malignant e.g. (papillary carcinoma – lymphoma)
 2. Inflammatory e.g. (acute thyroiditis – Hashimoto thyroiditis)

Q. May cervical LNs. develop metastases from a thyroid ca while it is not felt?

A.

Yes, in occult papillary carcinoma of the thyroid gland. This was thought in the past as ectopic thyroid gland and was called "*lateral aberrant thyroid*".

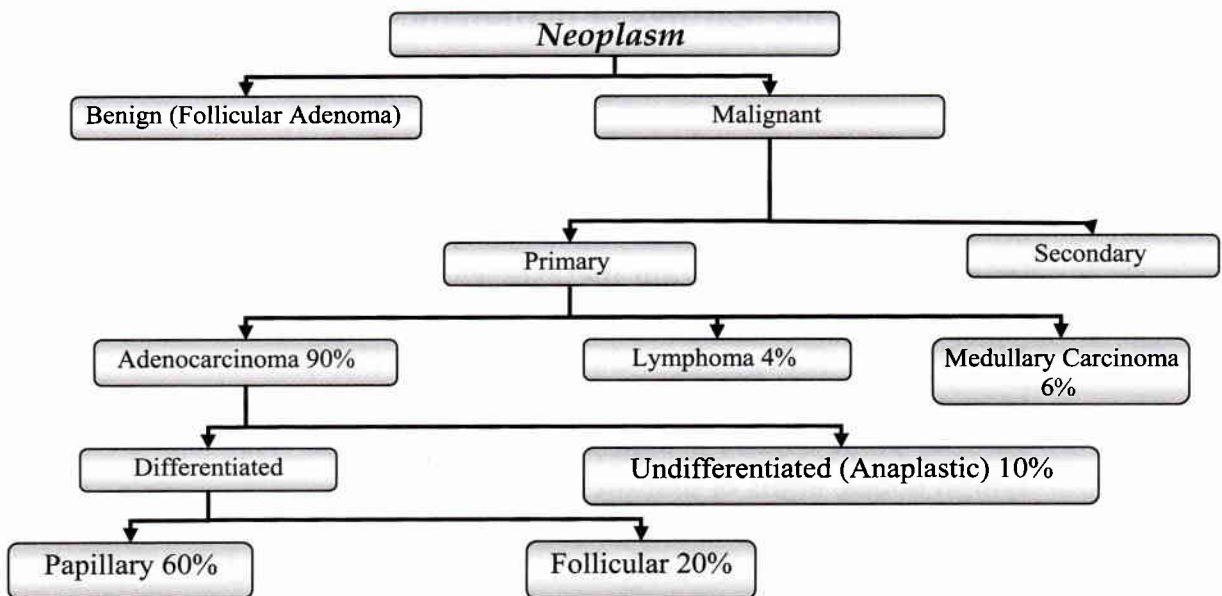
Q. What is the first LNs to be felt in cancer thyroid?

A.

Pretracheal, pretracheal (Delphian) lymph node

Q. What is the classification of thyroid neoplasm?

A.



Q. What is De Groot staging?

A.

- Stage I → Tumor with single or multiple intra-thyroid foci.
- Stage II → Tumor with mobile neck LNs
- Stage III → Tumor with fixed neck LNs ($\pm$ local invasion).
- Stage IV → Tumor with distant metastasis.

Q. What are the complications of cancer thyroid?

A.

1. Spread.

2. Other complications:

a) Local (infiltration of surroundings :

- Recurrent laryngeal n. → hoarseness of voice.
- Sympathetic chain → Horner's \$.
- Trachea → dyspnea not related to posture.
- Esophagus → dysphagia.
- Sternomastoid muscle.

b) General:

- Cachexia
- Metastasis (jaundice, cough, hemoptysis, pleural effusion)

Q. How would you elicit fixity to the trachea?

A.

- By fixing the trachea by one hand and trying to move the gland up and down with the other hand.
- Normally: there is a slight range of movement.

Q. How do you elicit fixity to the sternomastoid?

A.

- By asking the patient to swallow while pinching the relaxed sternomastoid,
- Normally I do not feel something pulling on the sternomastoid between my fingers.

Q. What are the investigations for malignant goitre?

A.

A. For diagnosis:

1. Lab:

Thyroid function → normal ; however TSH may be raised.

2. Imaging:

a) U/S:

Cystic → aspiration (Criteria of malignancy)

Solid → FNABC

b) Isotope scanning: cold nodule but extremely rare hyperfunction → thyrotoxicosis.

3. Biopsy:

a) FNABC

- 90 % accuracy
- Can't differentiate between follicular adenoma and follicular carcinoma because FNABC can't detect capsular and blood invasion

c) Hemithyroidectomy and paraffin section in follicular neoplasia

d) In an anaplastic & obviously irremovable carcinoma , incisional or core needle biopsy is justified

2. For staging:

1. CT scan.
2. CXR → lung metastasis.
3. Bone scan → bone metastasis (not done except after total thyroidectomy).
4. Abdominal U/S → liver metastasis.
5. Direct laryngoscopy, bronchoscopy, esophagoscopy.

3. For pre-operative preparation

CBC, FBS, KFTs, LFTs, CXR, ECG

4. For follow up:

1. Tumor markers:

- Calcitonin in medullary carcinoma.
- Thyroglobulin in differentiated follicular carcinoma.

2. Positron emission tomography (PET)

- Indication: in follicular carcinoma treated with thyroidectomy with post-operative rise of thyroglobulin level

5. For screening: In medullary carcinoma (familial type) → calcitonin, calcium, VMA → if high → total thyroidectomy even if thyroid is normal by other investigations.

Q. What is the treatment of cancer thyroid?

A.

1. Prophylactic → avoid predisposing factors as neck irradiation

2. Treatment of the tumor:

A- Differentiated carcinoma (Papillary & follicular):

I- Surgery:

a- Thyroid gland:

- Total thyroidectomy (removal of both lobes and isthmus) which is followed by 10 year survival rate of over 80%

b- Management of LNs:

- In children → no prophylactic block dissection of LNs.
- In adults → prophylactic block dissection of central group of LNs is done.
- If one LN is affected block dissection of LNs in the neck is done.
- In the past: cherry pick dissection of LNs was done.

II- Radioactive iodine:

➤ Aim:

- 1- Destroy remnants of normal thyroid tissue if present.
- 2- To ablate any metastasis from the tumor.

➤ Methods:

- After total thyroidectomy we wait till manifestations of myxedema appear
 - Pre-therapy scan: small dose of radioactive iodine is given and total body scan is done.
 - If there is metastasis: large ablative dose of radioactive iodine is given.
 - Post-therapy scan: done after the ablative dose by few weeks.

B- Anaplastic carcinoma:

- 1- Unfortunately, the majority of cases are irresectable at time of presentation
 - Tracheostomy or isthmus resection (or surgical debulking).
 - Radiotherapy and chemotherapy (down staging).
- 2- Rare cases are operable → the tumor should be excised as completely as possible (total thyroidectomy) and then treated by radiation and chemotherapy.

C- Medullary carcinoma:

- 1) Total thyroidectomy (removal of both lobes and isthmus of thyroid gland).
- 2) LNs management:
 - Medullary carcinoma is associated with high incidence of nodal involvement.
 - Central neck node dissection should be done in all patients.
 - Modified radical neck dissection for primary tumor > 1.5 cm in diameter and when nodes are involved
- 3) In sporadic type → preserve all parathyroid gland while in familial type, we preserve only 1/2 parathyroid gland (for fear of hyperparathyroidism).

- 4) If familial type → treatment of pheochromocytoma first (combined alpha & beta blockers).

3. Treatment of complications:

- 1) Tracheostomy for tracheal infiltration.
- 2) Gastrostomy for esophageal infiltration.
- 3) Isolated metastatic deposits of follicular and papillary carcinoma should be surgically removed and treated with I^{131} after total thyroidectomy or thyroid ablation with radioactive iodine.

4. Post operative follow up:

- 1) Every 3 months by thyroid scanning, clinical examination and tumor marker (it is helpful to measure serum level of thyroglobulin which are usually increased $> 2 \text{ ng/ml}$ in patients with residual tumor after total thyroidectomy).
- 2) Aim:
 - To detect local spread. - Distant metastasis.
 - Post operative complications as myxedema and RLN injury.

Browse's introduction to the symptoms & signs of surgical disease/ Ch 11 the neck/ thyroid p303-306

Case 4: recurrent goitre

Q. what are the types of recurrent goiter?

A.

False recurrence: due to

- **FB. Reaction:**
a granuloma around silk ligature or small piece of gauze left
Accidently
- **Inadequate initial removal:**
 - Partial : → leaving part equal to normal lobe size on each side ($4 \times 2.5 \times 2 \text{ cm}$)
 - Subtotal : → leaving a part less than normal lobe (in simple goiter leave $1/5$ of normal on each side)
 - Total : → leave $1/8$ of normal lobe on each side (subtotal)
- **Non-removal of a certain part of the gland:**
 1. Isthmus
 2. Pyramidal lobe → if present should be removed completely

True recurrence:

- **Commonly:** due to persistence of the same etiological factors of the primary goiter
 - a) Iodine deficiency
 - b) Dyshormonogenesis
 - c) Neoplastic
- **lack of post operative administration of T_3 & T_4 in SNG:**
(thyroid hormones keep the post operative TSH not fluctuating)

- 3 -

**INGUNIOSCROTAL
SHEET
(HERNIA)**

Inguino-Scrotal Case Sheet

1. Hernia

History

Personal H:

- Name
- Age
 - Indirect inguinal hernia : at any age
 - Direct inguinal hernia : at old age
 - Femoral hernia : adult
 - Congenital inguinal hernia : at birth
- Sex
 - Indirect inguinal hernia : male>female
 - Direct inguinal hernia : male only
 - Femoral hernia: common in females.
- Marital status
 - Repeated pregnancies lead to weakened abdominal wall and increase intra abdominal pressure
- Address, Residence
- Occupation: jobs with straining or carrying heavy objects → hernia
- Special habits of medical importance: smokers with chronic cough are liable to herniation

Complaint: بلفظ المريض إيه اللي جابك المستشفى
Usually swelling in the groin or the scrotum

HPI:

آخر مرة كنت سليم امتي

1. Pain:

Site, Character, Radiation, What increase or decrease, Onset, Course, Duration, Severity, and what associates.

2. Swelling:

- a) Site**
- b) Size** → (lemon size, orange size ...)
- c) Onset** ابتداء ازاي
 - Accidental
- d) Course:** Progressive
- e) Duration:** أول مرة لوحظ
 - Short: (days or weeks).
 - Long: (months or years).
 - Since birth → congenital.
- f) Other swellings:**
- g) Effect on the general condition:**

h)) **Apparent cause.**

i) **What increases? Strain & What decreases it? Rest**

j) **Relation of posture and straining to size of swelling:**

- If the swelling appears first at the lower part of abdominal wall, then enlarges towards the neck of scrotum, and the size of which varies in relation to posture and straining, being much reduced in size on lying flat on the back, and reappears on standing especially with straining. **This confirms the diagnosis of hernia.**
- On the other hand, if the swelling appears early at the bottom of the scrotum and enlarges until it fills and expands the scrotum completely, and its size never changed in relation to posture and straining. **This confirms the diagnosis of acquired hydrocele, or other nonreducible swelling.**

3. Disturbance of function:

Ask about the complications:

- Irreducibility
 - Manifestations of intestinal obstruction (acute abdomen, vomiting, absolute constipation & distension)
- الكلوعة دي بترجع لما تزقها
- في ترجيع اوامساك بدون براز او ريح

4. Other systems:

A. Precipitating factors:

- Chronic cough
- Chronic constipation
- Straining at micturation

B. Sliding hernia is suspected when:

- Long standing
- Irreducible
- Double micturation
- Pressure on hernia causes desire to micturate

5. History of investigations or medications

Past history

- Similar attacks.
 - Common diseases: (DM, Hypertension, TB, B, Hepatitis, DVT)
 - Drug allergy & intake
 - Blood transfusion
 - Previous Operations
- عملت عملية إيه؟ من إمتى؟ هل حصل تلوث في الجرح ؟

Family history

- Similar condition in one of the members of the family.
- Consanguinity

Examination

General:

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

اسطمة 3

- Body built.
- Decubitus
- Facial expressions.

حاجات 3

- Complexion → (3 colors) Jaundice, pallor & cyanosis.
- Chest & heart (COPD like asthma or bronchitis)
- Abdomen.
 - Swelling (hepatosplenomegaly , ascities)
 - Intestinal obstruction: distention borborigmi
 - Scar of previous operation
 - Muscular weakness: divarication of recti
 - P/R for SEP
- Extremities (L.L flat foot , varicose veins or edema)
- Pulse, blood pressure & temperature.
- Head, Neck, Spine → 3 تانيين
- Scrotum: if associated varicocele.

Local: سلم على العيان و قف على يمينه



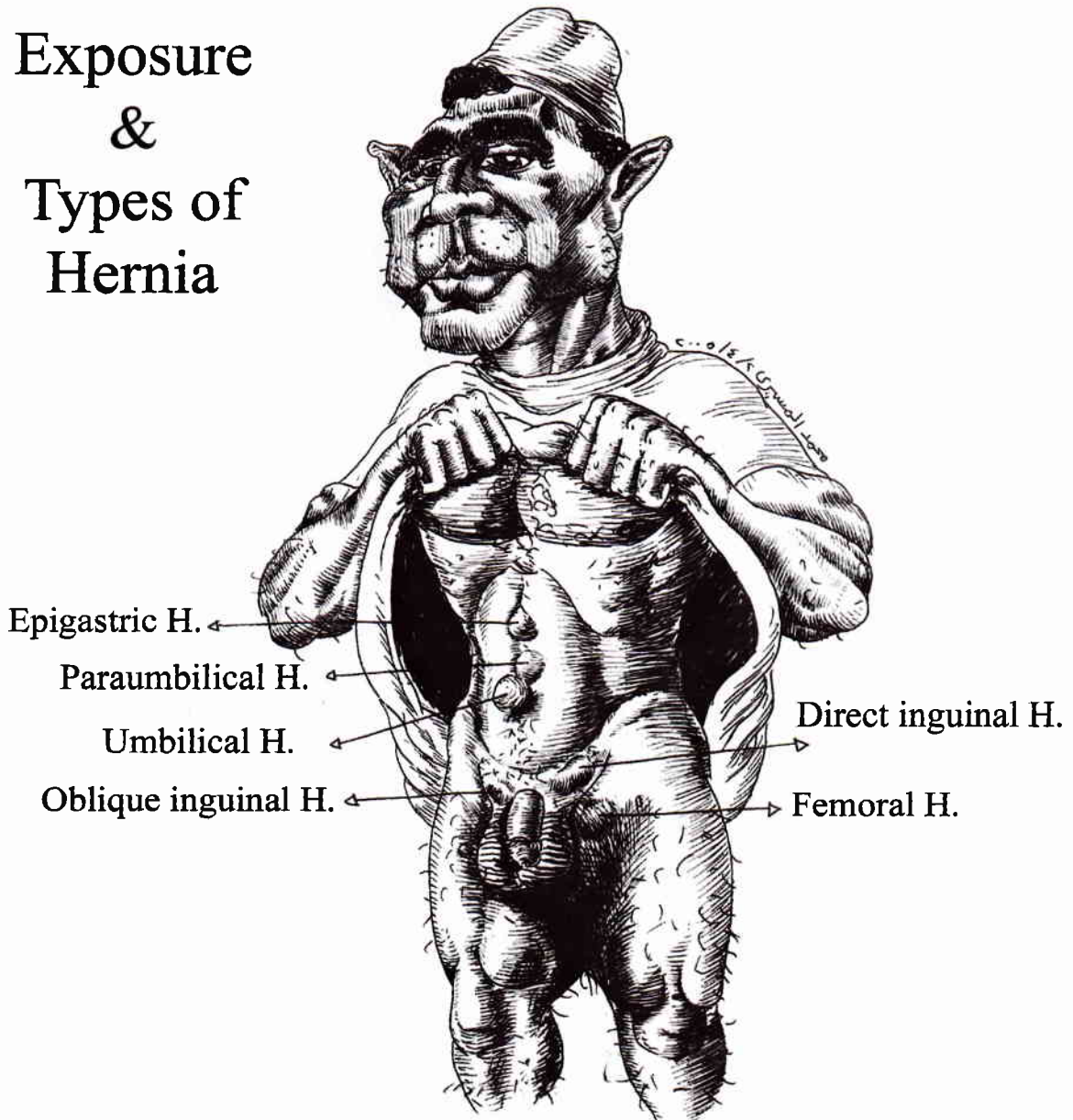
Exposure → while the patient is standing with exposing the area from the nipple to the knees.

Q. Why is the patient examined standing?

A.

- To know full extent of hernia sac.
- To inspect direct hernia and varicocele.

Exposure & Types of Hernia



Inspection : (1st standing then sitting)

+ كلمة السر كح على الشمال
و تعلق على



A. Swelling

1. Site

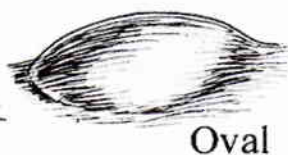
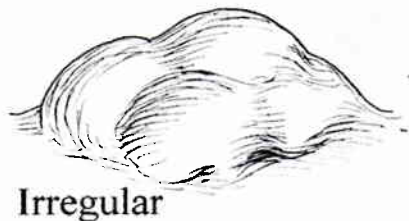
- For diagnosis
- Examples:
 - Umbilical hernia everts umbilicus.
 - Paraumbilical hernia: just above or below umbilicus distorting it. Crescent look upward if above, downward if below umbilicus.
 - Epigastric hernia : separated from umbilicus by interval

2. Size

- In cm (best)

3. Shape

- Irregular , Oval, Rounded, Pyriform (indirect inguinal hernia)



B. Skin overlying:

- Normal, Stretched, Pigmented,
- Show sign of inflammation (redness, edematous...),
- Dilated veins, Ulcer, Scar...

C. Special sign:

- Expansile impulse on cough (increase in size in all directions).

Palpation:

1. Swelling

- a. **Warmth:** حركة بظهر اليد
- b. **Tenderness:** حركة ببطن اليد و عيني على وجه العيان
- c. **Surface:** حركة براحة اليد

Smooth.



- d. **Edge:** حركة بجانب اليد
pedunculated.

- e. **Consistency :** حركة باليدين

- Soft→intestine
- Doughy→omentum



▪ **Special character**

- Grasp the swelling and ask the patient to cough:
Expansile= ↑ in size or tension → hernia.

- f. **Draining lymph nodes:** → inguinal & para-aortic

2- Scrotal Neck Test: حركة بكل اليد

- Bilaterally at the same time to detect whether the swelling is inguinal, scrotal or Inguinoscrotal
- Inguinal → hernia
- Inguinoscrotal → hernia or varicocele
- Scrotal → varicocele.

Q. Where is the neck of scrotum?

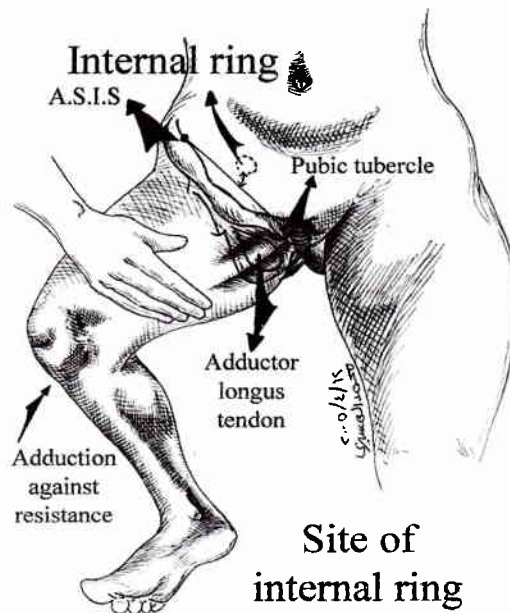
A. It is the junction between the scrotal cavity and the abdominal cavity which is located opposite the root of penis, and at which the rugose darker scrotal skin changes into a smooth less darker abdominal skin.

3- Internal Ring Test:

- Ask the patient to lie down and reduce the hernia, some authors believe it is better that the doctor reduces the hernia to know the content and direction of reduction.
- Localize the internal ring:
 - Localize the ASIS: (How)
 - Follow the iliac crest from the back till the most prominent point anteriorly.
 - Localize the pubic tubercle: (How):
 - Ask the patient to flex, adduct the thigh against resistance → then follow the tendon of adductor longus (most medial structure) the 1st bony prominence just above it is the pubic tubercle.
 - Localize the mid point of inguinal ligament (How)
 - Mid way between ASIS and pubic tubercle.
 - The internal ring lies 1/2 an inch above the mid point of inguinal ligament.
 - Ask the patient to stand while pressing the finger against the internal ring occluding it.
 - Ask the patient to cough then:
 - Observe the appearance of any inguinal swelling.
 - If the hernia appears → direct hernia.
 - If the hernia does not appear → remove your thumb and ask the patient to cough again → If appear → oblique inguinal hernia.

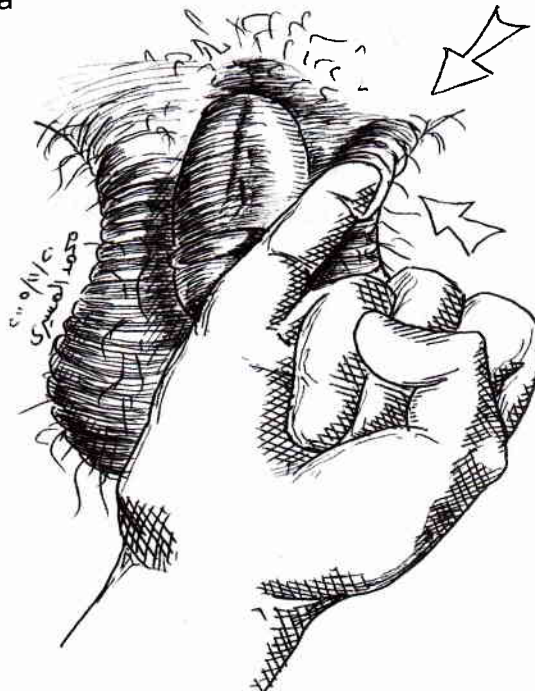
N.B.

- If the doctor reduces the hernia, direction of reduction and the content whether intestine (gargle) or omentum (doughly) will be observed
- Saphina Varix compressible, but, hernia reducible



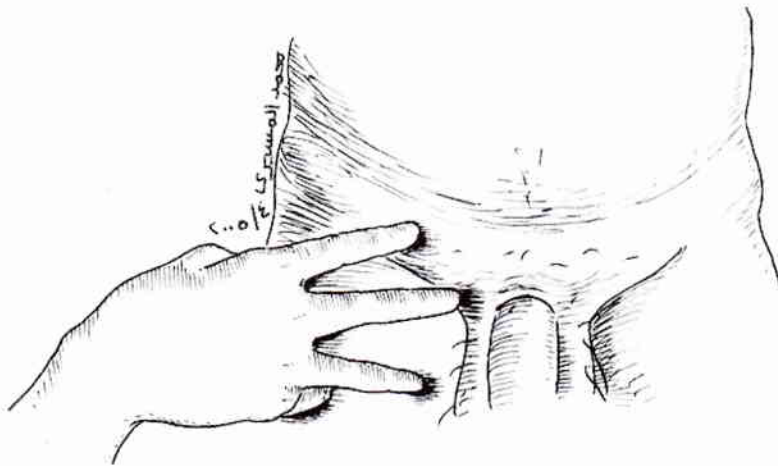
4-External Ring Test:

- While the hernia is reduced the patient stands, invaginate the skin of the scrotum by your little finger opposite the neck of the scrotum and introduce it through the external ring. inquire the patient to cough,
 - If impulse hits your finger tip, this with oblique hernia,
 - While if it hits the back of your finger, then it is direct hernia



5-Three Fingers Test: (Zieman's test)

- While the hernia is reduced and the patient lies on his back. Put one finger opposite the internal ring, the other finger just medial to the first one (opposite to the ing. canal), while the third finger below the inguinal ligament and opposite the femoral canal. Ask the patient to stand and then cough and watch which finger receives the hits (impulse) on cough:
 - If it hits the first finger --- oblique hernia.
 - If it hits the second finger --- direct hernia.
 - If it hits the third finger --- femoral hernia.



- Index finger: opposite the internal ring
- Middle finger: opposite the inguinal canal
- Ring finger: opposite the femoral canal

Three fingers test (Zieman's test)

6-Pubic Tubercle Test:

- Used to identify hernia in the groin is it inguinal or femoral?
- Follow the tendon of adductor longus till it ends.
- Get above it to the most prominent point.
 - if the neck of hernia above and medial → inguinal
 - If the neck of hernia is below and lateral → femoral

7- Reducibility:

- Swelling reduces or disappears as soon as it is pressed upon in a certain direction and reappears again on coughing or straining (e.g. hernia).

8- Examine

- **Spermatic cord**

- Beaded = B or T.B
- Matted = *filariasis*

- **Scrotum**

-Scrotum (ant, post aspect)

Shape, symmetry and swelling

- In all cases both sides of the scrotum should be palpated
- Back of the scrotum for T.B sinus
- Starting with the healthy side, first with the patient standing & then in the recumbent position
- Palpation of the epididymis(size, consistency, presence of sulcus, between it and the testis)
- tunica vaginalis (early hydrocele detected by pinching test. i.e. you feel double layers)

- **Testis**

- Size
- Consistency
- Testicular sensation

- **Penis** → for ulcer or scar of chancre

- Penis esp. external meatus (site, discharge by pressing the glans)
- Perineum
- Other hernial orifices.



Percussion:

Mainly in abdominal hernia:

If the contents (intestine): resonant i.e:

Enterocoele

If the contents (omentum): dull i.e: Omentocoele

Auscultation:

Intestinal sound is heard in Enterocoele

Transillumination:

Hernia in infant only is translucent

Special Investigations

Laboratory Investigations:

Hb%, urine and stool analysis, blood sugar, blood urea.

Pregnancy test, tumor markers

Radiological Investigations:

Plain X ray & Doppler, Duplex U/S.

Provisional Diagnosis

Anatomical:

It is diagnosis of the region which is affected (inguinal, femoral, and scrotal).

Etiological:

1ry, 2ry, congenital, paralytic...

Pathological:

Hernia (oblique or direct).

Associated condition:

I.e. complications → irreducible, strangulation.

Questions & Answers

Case 1. Inguinal Hernia

Q. What is the diagnosis?

A. Rt. oblique inguinal hernia, uncomplicated, containing intestine (omentum), no other hernias, associated with chronic cough.

Q. Why you diagnose it as a hernia?

A. Because it is a swelling
1) At the anatomical site of a hernia,
2) Gives an impulse on cough, and
3) It is (or was) reducible on lying down and by the patient fingers.

Q. Why oblique and not direct and what is the difference between them?

A. It is oblique because:
1) It descends into the scrotum,
2) On doing the internal ring test, there was no swelling to appear on coughing, and
3) The patient is a young male

The difference.

	<u>Indirect</u>	<u>Direct</u>
Incidence	80%	20 %
Age & sex	Any age. male > female	Old age. usually male
Side	Less common bilateral 30%	More common bilateral 50%
Shape	Pyriform	Hemispherical (rounded)
Direction of descend	Downward, forward and medial	Forward
Descent into scrotum	Can descend	Extremely rare
Reduction	Upward, backward and laterally	Backward
Int ring test	Does not descend	Descend
Ext ring test	Wide ring and show impulse at tip of little finger	Normal ring and show impulse at medial side of little finger
Complication	More common	Less common

Q. Why this is inguinal and not a femoral hernia?

A. It is inguinal because
1) The hernia is above inguinal ligament,
2) The neck of the hernia is above & medial to pubic tubercle and
3) Because the hernia descends into the scrotum (if so).

Q. What are the clinical types of oblique inguinal hernias?

A. the types are:

- Bubonocoele = Hernia is only in the groin.
- Funicular type = Hernia descends into the scrotum but the testis is felt separate from the hernial sac.
- Scrotal (complete) type = Hernia descends into the scrotum and the hernial sac surrounds the testis which is not felt through the contents of the hernia.

Q. What is the etiology of oblique inguinal hernia?

A.

There is predisposing factor & precipitating factors:

- The predisposing factor: is the presence of a preformed sac = persistent patent processus vaginalis.
- The precipitating factor is: any cause of increased intrabdominal pressure e.g. lifting heavy weights, chronic coughing and constipation or straining at micturition acquired pulsion sac may also occur

Q. Does any patient with patent processus vaginalis develop oblique inguinal hernia?

A.

No. the hernia develops only when there is a precipitating factor (such as increased intra-abdominal pressure due to lifting heavy weight for example) on top of predisposing factor (patent processus vaginalis) .

Q. Describe how did you do the internal ring test?

A.

- a. Ask the patient to lie down and reduce the hernia, then
- b. Ask the patient to stand while occluding the internal ring (by pressing the finger 1/2 an inch above the mid inguinal point), then
- c. Ask the patient to cough then:
 - Observe the appearance of any inguinal swelling.

Q. What is the surface anatomy of internal ring and external ring?

A.

- i. Internal ring: It lies 1/2 inch above the mid point of inguinal ligament
- ii. External ring: It lies 1/2 inch above & medial to the pubic tubercle.

Q. How to reach pubic tubercle?

A.
By asking the patient to put the thigh in flexion, adduction and internal rotation against resistance.
And following the tendon of the adductor longus muscle (the most medial muscle) the first bony prominence that meet your finger is the pubic tubercle.

Q. Did you do the external ring test? And why?

A.
No. I don't & this is because it is a painful test.

Q. When does direct hernia descend into the scrotum?

A.
Direct hernia can descend into scrotum in the following rare conditions:

1. Funicular type of direct hernia.
2. Paralysis of the conjoint tendon.
3. If it arises lateral to the conjoint tendon.

Q. How can you know the neck of scrotum clinically?

A.
By:

- Root of penis.
- Change of the color of skin.

Q. Where is the defect in oblique inguinal hernia & direct inguinal hernia?

A.

- In oblique inguinal hernia the defect is the internal ring.
- In direct inguinal hernia the defect is the posterior wall of the inguinal canal (Hasselbach's triangle).

Q. What are the boundaries & sub divisions of Hasselbach's triangle?

A.

- **The boundaries:** are the Lateral border of the rectus abdominis muscle medially, the inferior epigastric artery laterally and the inguinal ligament inferiorly.
- **Subdivision:** It is subdivided into medial and lateral parts by means of the medial umbilical ligament.

Q. What are the contents of this hernia and why?

A.

1- Intestine (enterocoele), because:

- 1) Gurgle during reduction,
- 2) Soft in consistency,
- 3) Reducibility first difficult then easy,
- 4) Auscultation revealed intestinal sounds.

2- Omentum, because

1. No gurgle
2. Doughy in consistency.
3. Reducibility first easy then difficult.

Q. What are the common contents of a hernia in general?

A.

- Any abdominal organ can be a content of a hernia except the pancreas because it is retroperitoneal and vertebrae behind it
- Intestine, omentum, fluid. Are the common content of hernia..

N.B Fluid is stated in some references to be the commonest content of a hernia

Q. What is hydrocoele of the hernial sac? And what is hernia of hydrocoele?!

A.

- Hydrocoele of the hernial sac: Part of the sac near its neck becomes blocked by a piece of omentum and accumulates fluid.
- Hernia of hydrocoele: in cases of vaginal hydrocoele, a defect occurs in the dartos fascia of the scrotum through which a part of the hydrocoele herniates.

Q. Mention the causes of residual swelling after reducing the hernia?

A.

- 1) Sliding hernia,
- 2) Incomplete reducibility due to adhesions between the contents and the sac
- 3) Hydrocele of the hernial sac
- 4) Associated lipoma of the cord

Q. How can you detect prostatic enlargement?

A.

A- Clinically:

1. P.R. examination

B- Investigations:

2. Cystography (IVP)
3. Cystoscopy
4. TRUS (transrectal U/S guided biopsy)

Q. What is the importance of examining for the presence of enlarged prostate?

A.

- This is because if it is present, it must be treated first to avoid recurrence of the hernia.

Q. What are the complications of hernia?

A.

1. Irreducibility =

- Failure to reduce the hernia in the absence of any other complications. It is due to adhesions within the sac or overcrowding of its content. It predisposes to obstruction and strangulation

2. Obstruction =

- Obstructed hernia is an enterocoele in which the lumen is obstructed from outside by the neck of the sac or band of adhesions or from inside by fecal impaction. It predisposes to strangulation.

3. Strangulation =

- Obstruction of the blood supply to the hernial contents.
- Obstruction is caused by the defect or by a band of adhesion. This leads to gangrene of the contents, peritonitis, septicemia, death.

4. Inflammation =

- Inflammation of the contents e.g. appendicitis, salpingitis or inflammation of the coverings e.g. skin

5. Rupture of the hernial sac (rare)

6. Hydrocele of hernial sac

Q. What is the clinical difference between obstructed and strangulated hernias?

A.

- This is difficult because both are very acute conditions with the hernia being painful, irreducible & tender.
- Impulse on cough is weak in obstructed hernia because it is large but is lost in strangulated hernias.
- The hernia is tense in strangulation but not in obstruction.
- Symptoms and signs of intestinal obstruction are present in obstructed hernias and maybe present in strangulated hernias.
- The degree of shock and toxemia are more severe in strangulated hernias.
- However, both conditions are considered surgical emergencies and necessitate an urgent interference to relieve the cause of obstruction and to deal with the contents.

Q. When you find strangulation without obstruction?

A.

If the content of the hernia is one of the following:

1. Omentum
2. Part of the circumference of the intestinal lumen (Richter's hernia)
3. Mickel's diverticulum (Littre's hernia)
4. Fallopian tube & ovary

Q. What is the commonest cause of inflammation of the hernial sac?

A.

- Ill fitting truss.

Q. What are the complications of truss?

A.

- Adhesion
- Infection
- ↑risk of strangulation
- Pressure atrophy on local muscles.

Q. What is Richter's hernia?

A.

- It is a hernia in which the content of the hernia is part of the circumference of an intestinal loop. It is more common in femoral hernia.

Q. What is Maydl's hernia? And what is its importance?

A.

- It is the W shaped hernia.
- Its importance is: if this hernia is strangulated, the gangrenous loop might not be within the sac, it may be within the abdomen so it is important during surgery to pull on the medial limbs if two loops.

Q. What is pantaloon hernia?

A.

- It is a combination of indirect and direct inguinal hernias, on one side and the inferior epigastric vessels lie between the two hernias.
- It is also called hernia en bisac.

Q. What is a sliding hernia?

A.

- It is a hernia in which a viscus (usually an extraperitoneal structure) "slides" to form part of the wall of the hernial sac.
- The commonest sliding structure on both sides is the urinary bladder.
- The caecum can descend on the right side, sigmoid colon can descend on the left side.

Q. How do you suspect clinically the presence of a sliding hernia?

- A.**
- From history, there is a double micturation (if the sliding organ is the urinary bladder) and the patient finds it necessary to press on the hernia to complete his micturation.
 - From examination, there is usually a residual swelling after reduction of the hernia (incomplete reducibility). Also, pressure on the sac causes a desire to micturate however, the sure diagnosis is intraoperative.

Q. What is the importance of such a sliding hernia?

- A.**
- If not recognized during the operation, the sliding organ may be injured or devascularized during dissection of the hernial sac.

Q. What is taxis? And what are its complications?

- A.**
- It is manual reduction of complicated hernia.
 - Is done by flexion, internal rotation of the thigh to relax the external oblique.
 - Valium or pethidine.
 - Cold compresses
 - Trial of reduction after 1/2 hour
 - It is more useful in children with early strangulation.
 - Its complications are:
 1. May cause shock.
 2. May cause rupture of the gut.
 3. Perforation in trial of reduction.
 4. Reduction en bisac into an intra-parietal sac.
 5. Reduction en mass.
 6. Reduction of gangrenous loop.

Q. What are the general principles of operations for hernia?

- A.**
- There are three types of operations; herniotomy, herniorrhaphy and hernioplasty.

Q. What is herniotomy ? herniorrhaphy? hernioplasty

- A.**
- Herniotomy: Excision of the hernial sac.
 - Herniorrhaphy: Excision of the hernial sac + repair of the defect using the local tissues
 - Hernioplasty: Excision of the hernial sac and repair of the defect using tissues other than the local ones or synthetic graft.

Q. If your patient has bilateral inguinal hernias, how would you proceed? And which side to operate upon first?

- A.**
- I will repair one side only and then the other side after 6 months. This is to avoid over stretching the abdominal muscles if both sides were repaired in the same time.
 - We usually start by;
 - a. The bigger hernia,
 - b. That with narrower neck, or
 - c. The more painful side.

Q. What are the indications of hernioplasty?

- A.**
1. Recurrent hernias
 2. Wide defects
 3. Weak muscles as in old age

Q. What material can be used as a graft in hernioplasty?

- A.**
- The material may be:
 - A. Endogenous e.g. skin graft, fascia lata graft or
 - B. Exogenous (synthetic) as prolene, dacron, teflon, merselene & PTFE grafts.

Q. What is the treatment of this case of oblique inguinal hernia?

- A.**
- O.I.H. in children and adolescents → inguinal herniotomy (excision of the hernial sac. They do not need repair as they have very good muscles)
 - O.I.H. in adults → Inguinal herniorrhaphy
 - O.I.H in elderly and recurrent cases → Inguinal hernioplasty

Q. Do you open the inguinal canal in adolescent?

- A.**
- Up to 4 years of age, there is no need to open the canal as the external ring lies exactly opposite the internal ring i.e. there is no canal.

Q. What is the effect if injury of ilioinguinal nerve?

- A.**
- It depends on site of injury:
 - During appendicectomy → paralysis of conjoint tendon → D.I.H
 - During hernia operation → numbness of the scrotum & inner aspect of the thigh

Q. What is the operation for oblique inguinal hernia in adults?

A.

- If the case is not recurrent and the local muscles are strong, we do inguinal herniorrhaphy, and if the case is recurrent or the local muscles are weak as in senility and debility, we do hernioplasty.

Q. What are the principles of inguinal herniorrhaphy?

A.

- Excision of the hernial sac + Repair of the defect by the local tissues.

Q. What suture material do you use in the repair?

A.

- The suture material to be used is prolene (non absorbable suture).

Q. What are the principal items of repair in inguinal herniorrhaphy?

A.

- Inguinal herniorrhaphy should include three main items;
 1. Narrowing the internal ring,
 2. Repair of the fascia transversalis, and;
 3. Reinforcement of the posterior wall of the inguinal canal.

Q. How do you repair the fascia transversalis?

A.

- There are two methods:
 1. Plication of the fascia transversalis
 2. Shouldice repair (double breasting of the fascia transversalis).

Q. what are the complications of herniorraphy?

A.

- 2ry hydrocele because of tightening of external ring or internal ring or both

Q. Mention some methods of reinforcement of posterior wall of inguinal canal.

A.

1. Bassini repair: suturing the conjoined muscle to the inguinal ligament.
2. Cooper's ligament repair: suturing the conjoined muscle to Cooper's (Pectineal) ligament.
3. Iliopubic tract repair: suturing the conjoined muscle to iliopubic tract
4. Darning of fascia transversalis.
5. Bloodgood repair: suturing a triangular flap reflected from anterior rectus sheath to inguinal ligament.

Q. What is the most popular type of repair?

A.

- Bassini repair (= Suturing the conjoined muscle to the inguinal ligament)

Q. What part of the conjoined muscle do you include in the repair?

- A.
- The tendinous and aponeurotic parts (Transversus Abdominis Aponeurosis).

Q. What is the disadvantage of Bassini repair?

- A.
- It is non-physiologic as it prevents the normal shutter mechanism.

Q. What additional procedures may be done during the inguinal herniorrhaphy?

- A.
1. Tanner's release incision: An incision in anterior rectus sheath to relax a tense repair
 2. Suturing the external oblique aponeurosis behind the cord (Halshted's repair).
 3. Orchidectomy: may be done in elderly.

Q. What are the indications of hernioplasty in inguinal hernia?

- A.
- Recurrent hernias and old patients (weak muscles)

Q. What is the principle of hernioplasty in inguinal hernia?

- A.
- Excision of the hernial sac + Repair of the defect using tissues other than the local ones (i.e. using a graft, usually a prolene mesh graft).

Q. What is the principle of operation for direct inguinal hernia?

- A.
- It is nearly the same as in O.I.H., but the sac instead of being excised, is inverted (invaginated) except if it is huge or funicular sac where it is excised.
 - The principles of repair are the same as in O.I.H. except that there is no need to narrow the internal ring as it is not widened except if associated with an oblique inguinal hernia.

Q. What are the causes of recurrence of a hernia?

- A.
1. Untreated preoperative condition: chronic straining (asthmatic bronchitis, prostatic enlargement . . . etc.), debility, obesity
 2. Intra-operative causes: improper hemostasis, tense repair, lax repair, repair with absorbable suture material
 3. Postoperative causes: hematoma, infection, early return to hard work

Case 2: Paraumbilical Hernia

Q. What is diagnosis?

A.

- This is a case of Paraumbilical hernia, uncomplicated.

Q. Why this is a hernia?

A.

- Because it is a swelling:
 - 1) At the anatomical site of a hernia,
 - 2) Gives an impulse on cough, and
 - 3) It is (or was) reducible on lying down and by the patient fingers.

Q. What are the types of umbilical hernias?

A.

i. True umbilical hernias:

- Congenital umbilical hernia (exomphalos major and minor) = present at birth.
- Infantile umbilical hernia (from weak umbilical cicatrix) = present shortly after birth.
- Adult umbilical hernia (from stretch of the abdominal wall by increased intrabdominal contents) = present in adult life.

ii. Paraumbilical hernias:

Due to a defect in the linea alba close to the umbilicus. 2 types

- 1) Supraumbilical
- 2) Infraumbilical

Q. What are the causes of hernia in general?

A- Congenital (Preformed sac)

1. Unobliterated processus vaginalis (congenital sac):
→ Congenital inguinal hernia.
2. Unobliterated physiological umbilical hernia (congenital defect):
→ Congenital umbilical hernia (exomphalos).

B- Acquired

1. Raised intra-abdominal pressure (precipitating factors) due to:
 - Chronic cough. - Straining due to constipation, prostatism.
 - Obesity. - Abdominal swelling (Splenomegaly).
2. Weak anterior abdominal wall due to:
 - Repeated pregnancy. - Obesity. - Senility.
3. Paralysis of wall:
 - a- Grid iron incision with Rutherford Morison extension
→ Injury of ileo-inguinal nerve (supplying conjoint tendon)
→ Direct inguinal hernia

Q. How obesity would predispose to abdominal hernias?

A.

By

- 1) Increase in abdominal contents, and
- 2) Deposition of fat between the muscle fibers thus weakening the muscle.

Q. This patient is obese, do you advise her (him) for something before the operation?

A.

- Yes, I advise her (him) to reduce weight first, otherwise the hernia might recur.

Q. What is the explanation of complaining of dyspepsia in patient with paraumbilical hernia?

A.

- This is due to traction on the greater omentum which is commonly the content of this hernia.

Q. What is the commonest complication of paraumbilical hernia ? and why?

A.

- The commonest complication is Irreducibility.

Due to:

1. Adhesions
2. Multiloculations
3. Small defect in relation to the size of hernia.

Q. What is the danger of such irreducibility?

A.

- It predisposes to obstruction and strangulation.

Q. What is the treatment of this case?

A.

- Herniorrhaphy.

Q. What type of repair do you do?

A.

- It varies according to the size of the defect as follows:
 - Small defect → Anatomical repair **OR** Mayo's repair
 - Large defect → Hernioplasty (prolene mesh graft)

Q. What is the principle of Mayo's repair? Is it ideal?

A.

- Double breasting of the abdominal wall aponeurosis.
- No, it is not because it is followed by a high rate of recurrence.

Case 3: Other Types of Hernia

I. EPIGASTRIC HERNIA

Q. How to differentiate between paraumbilical and an epigastric hernia?

A.

- In paraumbilical hernia, the defect is above or below the umbilicus so that the umbilicus is distorted, while in epigastric hernia, there is a bridge of normal abdominal muscles between the defect and the umbilicus. Besides, epigastric hernia could be multiple

Q. What is the treatment of epigastric hernia?

A.

- It varies according to the size of the defect as follows:
 - Small defect → Anatomical repair OR Mayo's repair
 - Large defect → Hernioplasty (prolene mesh graft)

II. INCISIONAL HERNIA

Q. Mention the causes of incisional hernia?

A.

- There are:
 1. Preoperative causes, Chronic straining (asthmatic bronchitis, prostatic enlargement. etc.), debility, obesity
 2. Intraoperative causes, Improper haemostasis, tense repair, lax repair, repair with absorbable suture material
 3. Postoperative causes Haematoma, infection, early return to hard work

Q. How do you treat an incisional hernia?

A.

- Small defect → Anatomical repair
- Large defect → Hernioplasty (prolene mesh graft),
Keel operation
Kattell 'S operation

Q. What is Keel operation, Kattell operation?

A.

- Keel operation = the sac is not opened (inverted) & the defect is closed by a series of inverting sutures.
- Kattell's operation = The sac is opened & the defect is closed by multiple layers from surrounding tissues (6 layers)

III. FEMORAL HERNIA

Q. Why the femoral hernia is more common in female?

A.

- Due to:
 1. Wide pelvis (wide femoral canal) + small BVs
 2. ↑ intra-abdominal pressure by pregnancy
 3. Laxity of abdominal muscles & tendons in pregnancy

Q. What are the types of femoral hernia?

A.

- Congenital: femoral hernia of Cloquet (Narathe's hernia) in congenital hip dislocation (CHD)
- Acquired: more common

Q. What is the principle of treating femoral hernia?

A.

- Remove the sac of fat & close the femoral canal with sutures

Q. Why truss is contraindicated in femoral hernia?

A.

- Hernia not reducible
- Not fit to upper thigh

Q. What are DD of swelling in femoral triangle?

A.

1) Reducible swelling

- Saphina varix (thrill on cough + V.V.)
- Femoral artery aneurysm (expansile pulsation, proximal pressure → ↓ swelling)
- Psoas abscess (cystic, cross fluctuation, disappears on hip flexion)
- Inguinal hernia (above pubic tubercle)

2) Irreducible swelling:

- Skin tumor
- Subcutaneous lipoma
- LNs
- Ectopic testis

3) Strangulated femoral hernia

- Inflammation → acute lymphadenitis
→ Abscess

-
- Trauma → torsion
 - Rupture adductor longus tendon
 - Anterior hip dislocation

IV. INTERNAL HERNIA:

Q. Mention what you know about internal hernia?

A.

- **Definition:**

Herniation of intestine through peritoneal fossae or defect in the mesentery.

- **Examples:**

- All diaphragmatic hernias
- Hernia through foramen of Winslow (epiploic foramen)
- Retrocecal hernia through retrocecal recess.
- Paraduodenal hernia (through peritoneal fossae near the duodenum)
- Defect in (transverse mesocolon, mesentery of S.I, broad ligament of the uterus)

- **C/P:** Intestinal Obstruction

- **Investigations:** plain X-ray erect & supine

- **Treatment:**

Preoperative preparation: ryle, line, catheter....

Divide the constricting agent except if the fossa is vascular as (paraduodenal, mesentery, Winslow)

Release the contents

Or: resection anastomosis of the gangrenous loop

Q. What are the boundaries of the inguinal ring?

A.

- **Boundaries of the inguinal canal:**

- Floor = inguinal ligament,
- Roof = arching fibres of conjoined muscle,
- Anterior wall = external oblique aponeurosis.
- Posterior wall = fascia transversalis, conjoint tendon.

- The deep inguinal ring is in fascia transversalis, while the superficial inguinal ring is in external oblique aponeurosis.

Q. What is the boundries of the femoral canal?

A.

- **Boundaries of the femoral opening:**

- Anteriorly: inguinal (Poupart's) ligament,
- Posteriorly: pectineal (Cooper's) ligament
- Medially: lacunar (Gembernat's) ligament
- laterally: femoral vein

- 4 -

**INGUNIOSCROTAL
SHEET
(VARICOCELE)**

Inguino-Scrotal Case Sheet

2. Varicocele

History

Personal H:

Name, Age, Sex, Address, Residence, special habits of medical importance,

Occupation: prolonged standing may predispose to varicocele

Marital status: sub-fertility may complicate varicocele

Complaint:

بلفظ المريض إيه اللي جابك المستشفى

Usually swelling in the groin or the scrotum

HPI:

آخر مرة كنت سليم امتى

1. Pain

Site, Character, Radiation, What increase or decrease, Onset, Course, Duration, Severity, and what associates.

2. Swelling

a) **Onset** ابتداء ازاي

- Accidental
- Acute
- Gradual

b) **Course:**

- Progressive
- Stationary
- Regressive.
- Fluctuating

c) **Duration:** أول مرة لوحظ

- Short: (days or weeks).
- Long: (months or years).
- Since birth → congenital.

d) **Site**

e) **Size** → (lemon size, orange size ...)

f) **What increase & what decrease it?**

g) **Effect on the general condition:**

h) **Apparent cause.**

i) **Other swellings:**

3. Disturbance of function

Ask about the complications:

- Sexual affection e.g. infertility.

4. Other systems

- Increased intra-abdominal pressure as
 - Chronic cough
 - Constipation
 - Straining at micturition

5. History of investigations or medications

Past history

- Similar attacks.
- Common diseases: (DM, Hypertension, TB, B, Hepatitis, DVT)
- Drug allergy & intake
- Blood transfusion
- Previous Operations
- Gonorrhea
- Filariasis
- Urinary troubles
- Past history of trauma

Family history

- Similar condition in one of the members of the family.
- Consanguinity

Examination

General:

Pt. is alert, conscious, oriented to time, place, & persons, average build, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

اسطمية 3

- Body built.
- Decubitus
- Facial expressions.

- Complexion → (3 colors) Jaundice, pallor & cyanosis.

حاجات 3

- Chest & heart (COPD like asthma or bronchitis)
- Abdomen. (hepatosplenomegaly , ascities)
- Extremities (L.L flat foot , varicose veins or edema)
- Pulse, blood pressure & temperature.
- Head, Neck, Spine → 3 تانيين
- PR: for SEP.

Local: سلم على العيان و قف على يمينه

Exposure → while the patient is standing with exposing the area from the nipple to the knees.

Inspection :(1'st standing then sitting)

كلمة السر (كح على الشمال) +
و تعلق على

A. Swelling

Fullness in RT or LT scrotal compartement

The testis hangs lower down

Theres is dilated veins over the skin of the scrotum

B. Skin overlying:

- Normal, Stretched, Pigmented,
- Show sign of inflammation (redness, edematous...),
- Dilated veins, Ulcer, Scar...

C. Special sign:

- Expansile impulse on cough (increase in size in all directions).

Palpation:

1. Swelling

a. Warmth: حركة بظهر اليد

b. Tenderness: حركة ببطن اليد و عيني على وجه العيان

c. Surface: حركة براحة اليد

Smooth, granular, nodular, lobulated...etc.

d. Edge: حركة بجانب اليد

Ill defined, well-defined, pedunculated.

e. Consistency: حركة بكل اليد

- Cystic or solid.

2- Scrotal Neck test: حركة بكل اليد

- Bilaterally at the same time to detect weather the swelling is inguinal, scrotal or Inguinoscrotal
- Inguinoscrotal → varicocele



- Ask the patient to lie down and elevate the scrotum
- Ask the patient to cough → thrill

1^{ry} varicocele	2^{ry} varicocele
Thrill present	Not present
Decrease by elevation of scrotum	No change

f. Draining lymph nodes: → inguinal & Para-aortic

3-Bow sign:

- If while holding the varicocele lightly between the finger's and the thumb, the patient is instructed to bend forward, tension within the varicocele becomes appreciably less. Positive Bow's sign indicates that the patient is likely to benefit from the operation.

4- Examine:

- Penis → for ulcer or scar of chancre
- Scrotum
 - In all cases both sides of the scrotum should be palpated,
 - Starting with the healthy side, first with the patient standing & then in the recumbent position
 - Palpation of the epididymis (size, consistency, presence of sulcus, between it and the testis)
 - tunica vaginalis (early hydrocele detected by pinching test)
- Testis
 - size
 - consistency
 - testicular sensation
- Spermatic cord
 - Beaded Or matted
 - swelling in its lower part or thickening

Special Investigations

Laboratory Investigations:

Hb%, urine and stool analysis, blood sugar, blood urea.

Radiological Investigations:

Plain X ray & Doppler, Duplex U/S.

Provisional Diagnosis

Anatomical

It is diagnosis of the region which is affected (inguinal, femoral, scrotal RT,LT).

Etiological:

1ry, 2ry.

Pathological

varicocele

Associated condition

i.e. complications → sub fertility.....

Browse's introduction to the symptoms & signs of surgical disease/ Ch 13 external genitalia P350

Questions & Answers

Case: Primary Varicocele

Q. What is the diagnosis?

A.

It is a case of left primary varicocoele not complicated.

Q. How did you reach this diagnosis?

A.

▪ By the following:

• Symptoms:

○ Pain:-

Dragging pain due to relaxation of dartos and cremasteric muscle.

-
- Swelling:-
Scrotal swelling.
 - Signs:
 - General: patient is tall and thin.
 - Local:
 - Inspection:
 - ✓ Scrotal fullness.
 - ✓ Left side of scrotum hangs lower than right side
 - ✓ Scrotal skin show dilated veins.
 - Palpation:
 - ✓ Scrotal neck test: fullness at the neck of the scrotum.
 - ✓ Varicosities: felt as bag of worm.
 - ✓ Thrill on cough due to turbulence of blood flow.
 - ✓ Swelling which disappear when the patient lie down and the scrotum is elevated.

Q Why is it a primary varicocele ?

A.

As there is:

1. Impulse & thrill on cough.
2. Swelling decrease in size when the patient lies down.
3. Disappear on elevation of scrotum.

Q. Mention the types of varicocoele?

A.

Types of varicocele are:

- 1- Primary varicocele.
- 2- Secondary varicocele.

Q. What is the cause of 1ry varicocele?

A.

There is predisposing factors and precipitating factors:

Predisposing factors

- Age:
 - Between puberty and 35 years
- Congenital weak mesenchyme:
 - Which might be associated with hernia & varicose veins, piles.

Precipitating factors

- Increase venous pressure
 1. Prolonged standing.
 2. Straining as in constipation.
 3. Venous congestion due to unrelieved sexual excitement

Q. What is the cause of 2ry varicocele?

A.

It is due to venous obstruction

1. The commonest cause is **hypernephroma** (it spreads in the renal vein like fingers in glove).
2. Retroperitoneal tumors.
3. Retroperitoneal fibrosis.

Q. What are the differentiating points between 1ry and 2ry varicocoele?

A.

	1ry varicocoele	2ry varicocoele
From history		
Age	15-25 years	> 40 years
Onset	Gradual	Sudden
Duration	Long	Short
Site	Usually LT (95%)	Rt or Lt
From examination		
On lying down	Empty	Doesn't empty
On coughing	Thrill	No thrill
Abd. Exam	No swelling	Usually reveals hypernephroma

Q. What is the explanation of the higher incidence of primary varicocele in the left side more than the right side?

A.

Because of the following reasons

1. Pelvic colon passes on the left testicular vein.
2. The left testicular vein is longer than the right vein (i.e. more venous pressure)
3. The left testicular vein opens at right angle in the left renal vein.
4. Left suprarenal gland secretes adrenaline near the mouth of the left testicular vein
5. The left common iliac vein is crossed by the right common iliac artery this causes higher pressure in the veins of the vas & cremasteric vein
6. High pressure in the left renal vein as it is compressed between the superior mesenteric artery & aorta (nut cracker effect)
7. The left testicular artery arches over the left renal vein in 16 % of cases.
8. Valves at the end of the left testicular vein are usually malformed while on the right side are usually competent

Q. Mention the complications of 1ry varicocoele?

A.

1. Subfertility (20 % of cases)
2. Thrombosis → thrombophlebitis
Either acute or subclinical
 - In acute form it causes severe pain.
 - It is treated by rest in bed, analgesic, antibiotics, & rest of affected organ (elevation of the scrotum).
3. Secondary hydrocele
 - Due to chronic congestion of the testis.
4. Testicular atrophy!!! (very late)
 - Chronic congestion → ↑ venous pressure → ↓ arterial blood supply → testicular atrophy.
 - The testis becomes softer in consistency & smaller in size.
5. Neurosis

Q. What is the cause of subfertility?

A.

• Thermal Theory:

- The temperature difference between scrotum & rectum has to be 2.5°C.
- If less this might impair spermatogenesis.

Even if unilateral due to transmission of heat by contact with the other side.

Q. What is the grade of varicocoele?

A.

A. Clinically detected varicocoele:

- Grade I: present only with Valsalva.
- Grade II: present without Valsalva.
- Grade III: visible through the skin (bag of worms).

B. Subclinical (not palpable): detected by Doppler reflux on Valsalva maneuver.

Q. How can you treat a case of 1ry varicocoele ?

A.

- There are 2 lines of treatment:
 1. Conservative treatment for all cases.
 2. Operative treatment for some cases.

Q. Give indications of surgery in 1ry varicocoele?

A.

- Failure of medical treatment (Severe symptoms that can't be tolerated).
- Complications:
 - 1- Subfertility.
 - 2- Recurrent thrombophlebitis
 - 3- Failure of medical commission.
 - 4- Neurotic patient

Q. What are investigations do you ask for in this case?

A.

Laboratory

- Semen analysis (for medico-legal importance) → **stress pattern**.

Radiological

- **Duplex scan** → detects reversed blood flow & bilaterality.
- **Scrotal or Transrectal U/S:**
 - Best test to evaluate the seminal vesicles and ejaculatory ducts.
 - Valuable in visualizing and grading varicoceles.
- **Abdominal U/S** → to exclude zry varicocele e.g. hypernephroma.

Q. What is the importance of semen analysis?

A.

Semen analysis is of a medico-legal importance as if the patient complains of infertility after the operation; the analysis is repeated and compared with the preoperative one. It may reveal a low count in both reports and thus infertility is not regarded to the operation.

Q What are the results of semen analysis you expect in this patient?

A.

Semen analysis in this patient may show stress pattern which include:

- Oligospermia.
- Teratospermia
- Athenospermia.

Q. What are the different approaches for varicocoele?

A.

1. Open surgery:-

A. Microscopic sub-inguinal approach (Mark Goldstein):

- The most commonly used approach.

B. Inguinal approach (Modified Ivanissevish and Gregorini)

C. Retroperitoneal approach (Palomo)

2- Laparoscopic varicoselectomy

3- Percutaneous venous embolization

Q. What is the advantage of the Palomo's operation over the lower approaches?

A.

- Testicular artery has not yet branches at this level, and is distinctly separated from internal spermatic vein
- Isolating the internal spermatic vein at the level where only one or two large veins are present

Q. What is the mechanism by which hypernephroma causes secondary varicocoele?

A.

Hypernephroma extend inside the renal vein like finger in gloves resulting in obstruction of the testicular vein → secondary varicocoele.

Q. Why 2ry varicocoele is more common on the Lt. side?

A.

Because on the left side, the left testicular vein drains into the renal vein, while the right testicular vein drains into the inferior vena cava. So, 2ry varicocoele on the left side occurs when there is tumor thrombosis of the left renal vein, whereas on the right side, thrombosis should extend to IVC to occlude the right testicular vein.

- 5 -

**INGUNIOSCROTAL
SHEET
(HYDROCELE)**

Inguino-Scrotal Case Sheet

3. Hydrocele

History

Personal H:

- Name, Age, Sex, Marital status, special habits of medical importance
- Address (for filariasis), Residence, Occupation.

Complaint:

بلفظ المريض إيه

اللي جابك المستشفى

- Usually swelling in the groin or the scrotum

HPI:

آخر مرة كنت سليم امتي

1. Pain

Site, Character, Radiation, What increase or decrease, Onset, Course, Duration, Severity, and what associates.

2. Swelling

a) Site

b) Size → (lemon size, orange size ...)

c) Onset *ابتداء ازاي*

- Accidental

d) Course:

- Progressive

- Stationary

e) Duration: *أول مرة لوحظ*

- Short: (days or weeks).

- Long: (months or years).

- Since birth → congenital.

f) Other swellings

g) Effect on the general condition

h) Apparent cause.

i) What increase & what decrease it?

(Increase at end of the day) (Decrease in the early morning)

3. Disturbance of function

4. Other systems

5. History of investigations or medications

Past History:

- Similar attacks.
- Common diseases: (DM, Hypertension, TB, B, Hepatitis, DVT)
- Drug allergy & intake
- Blood transfusion
- Pervious Operations (post herniorrhaphy hydrocele)
- Gonorrhea
- Flariasis
- Urinary troubles
- Past history of trauma

Family History:

- Similar condition in one of the members of the family.
- Consanguinity

Examination

General:

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

- اسطمية 3 {
- Body built.
 - Decubitus
 - Facial expressions.
- حاجات 3 {
- Complexion → (3 colors) Jaundice, pallor & cyanosis.
 - Chest & heart (COPD like asthma or bronchitis)
 - Abdomen. (hepatosplenomegaly, ascities)
 - Extremities (L.L flat foot , varicose veins or edema)
 - Pulse, blood pressure & temperature.
 - Head, Neck, Spine → تانيين 3
 - Scrotum: if associated varicocele.
 - PR: for SEP.

Local: سلم على العيان و قف على يمينه

Exposure → while the patient is standing with exposing the area of the nipple to the knees.

Inspection : (1'st standing then sitting)

From 2 different planes + كلمة السر كح على الشمال
و تعلق على

A. Swelling

1. Site

- Scrotum+ side (RT-LT).

2. Size

- In cm (best)

3. Shape

- Globular

B. Skin overlying:

- Normal, Stretched, Pigmented,
- Show sign of inflammation (redness, edematous...),
- Dilated veins, Ulcer, Scar...

C. Special sign:

- No Expansile impulse on cough

Palpation:

1. Swelling

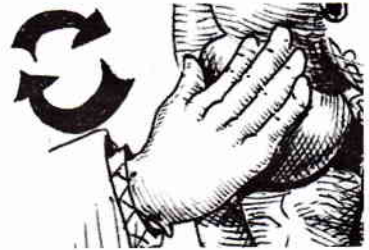
a. Warmth: حركة بظهر اليد

b. Tenderness: حركة ببطن اليد و عيني على وجه العيان

c. Surface: Smooth حركة براحة اليد

d. Edge (pedunculated) حركة بجانب اليد

e. Consistency (cystic) حركة باليدين



2. Special tests:

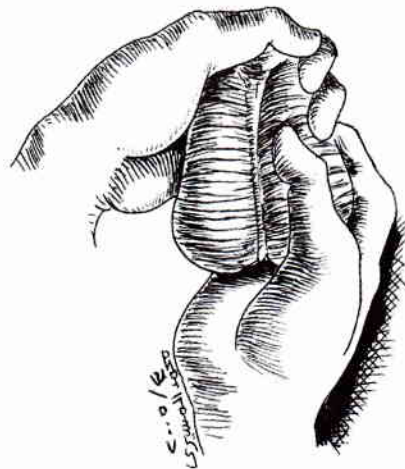
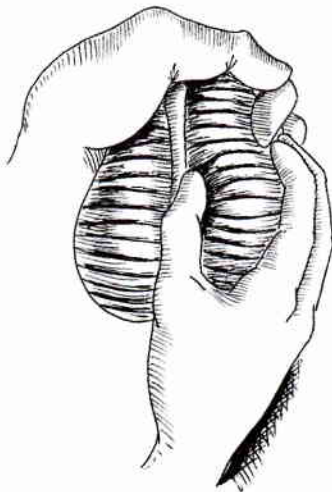
A. Scrotal Neck test: حركة بكل اليد

- Bilaterally at the same time to detect whether the swelling is inguinal, scrotal or Inguinoscrotal
- Scrotal → varicocele or hydrocele.

B. Bipolar fluctuation test: (cystic swelling)

Fix swelling and make it tense

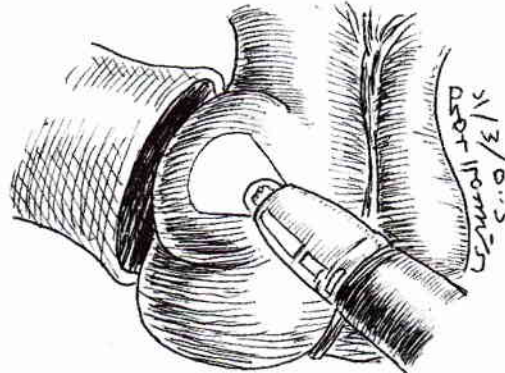
It will receive impuls



Press by this hand

C. Trans-illumination Test: (من الجنب إلى الجنب ال swelling)

- Translucent cysts = clear fluid → hydrocele.
- Opaque cysts = blood, pus,



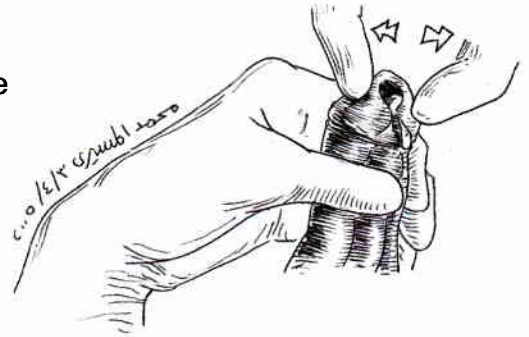
Trans-illumination test

3. Draining lymph nodes: → Inguinal & para-aortic

4. Examine

- **Penis** → for ulcer or scar of chancre

Penis esp. external meatus
(site, discharge by milking
the urethra)

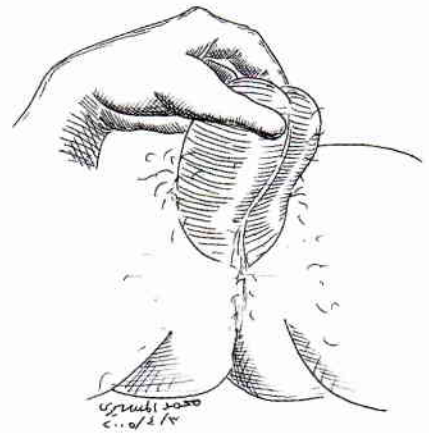


- **Perineum**

- **Other hernial orifices.**

- **Scrotum**

- Scrotum (ant, post aspect)
- Shape, symmetry and swelling
- In all cases both sides of the scrotum should be palpated
- Back of the scrotum for T.B sinus
- Starting with the healthy side, first with the patient standing & then in the recumbent position
- Palpation of the epididymis (size, consistency, presence of sulcus, between it and the testis)
- Tunica vaginalis (early hydrocele detected by pinching test)



- **Testis**

- Size - Consistency - Testicular sensation

- **Spermatic cord**

- Beaded = B or T.B - Matted= filarasis

Special Investigations

Laboratory Investigations:

Hb%, urine and stool analysis, blood sugar, blood urea.

Pregnancy test, tumor markers

Radiological Investigations:

Plain X ray & Doppler, Duplex U/S.

Provisional Diagnosis

Anatomical

- It is diagnosis of the region which is affected (scrotum)

Etiological :

- 1ry, 2ry, congenital.

Pathological

- Hydrocele.

Associated condition

- i.e. complications → infection , hemorrhage. Rupture

Browse's introduction to the symptoms & signs of surgical disease/ Ch 13 external genitalia P347-349

Questions & Answers

Case 1: Vaginal Hydrocele

Q. What is your diagnosis?

A.

- Rt. primary vaginal hydrocele not complicated.

Q. Why this is a primary vaginal hydrocele?

A.

- **Symptoms**

Painless swelling in one f the scrotal compartment (gradual onset, progressive course, long duration)

- **Signs**

☐ Inspection → Swelling in one scrotal compartment

☐ Palpation → non tender, cystic, translucent and purely scrotal swelling.

Q. What is vaginal hydrocele?

A.

It is accumulation of serous fluid between the two layers of the tunica vaginalis.

Q. What are its types?

A.

- It is of two types:
 - 1ry vaginal hydrocele: of unknown aetiology
 - 2ry to any disease of testis, epididymis or spermatic cord

Q. What are the types of hydrocele?

A.

A. hydrocele of tunica vaginalis:

1. Congenital.
2. Infantile.
3. Vaginal hydrocele (1ry or 2ry)

B. Hydrocele of spermatic cord:

1. Encysted hydrocele of the cord
2. Diffuse hydrocele of the cord.
3. Hydrocele of hernial sac.

C. Rare types:

1. Hydrocele of canal of Nuck (in females).
2. Tyre hydrocele: recurrent after eversion.
3. Hydrocele en bisac: one below scrotal neck and one above.

Q. What is the etiology of primary vaginal hydrocele?

A.

- Idiopathic.
- The most accepted theory is lry filariasis of the tunica leading to transudation of serous fluid from the visceral and parietal layers of the tunica.

Q. How did you know that it is purely scrotal?

A.

- By grasping the neck of the scrotum by two fingers; thumb in front and index finger behind the neck, it was found that the swelling is completely below the fingers.

Q. How did you know that it is a cystic swelling?

A.

- By doing the bipolar fluctuation test;
- One hand's fingers are placed around the neck of the scrotum, and the other hand's fingers hold the bottom of the swelling.
- The latter squeezes the swelling where an impulse is perceived by the other hand's fingers at the top of the swelling.

Q. What are the values of transillumination in hydrocele?

A.

- It differentiates between hydrocele which is translucent and other opaque cysts. It also localizes the testis in case of vaginal hydrocele.

Q. What is the value of localizing the site of the testis in hydrocele?

A.

- To avoid its injury if aspiration is done.
- The size of the testis could also be assessed

Q. What is the etiology of secondary hydrocele?

A.

- It occurs secondary to diseases of the testis, epididymis and spermatic cord e.g. inflammations, malignancy and varicocoele.

Q. What are the clinical differences between 1ry and 2ry vaginal hydrocele?

A.

1ry vaginal hydrocele	2ry vaginal hydrocele
• Usually Large and Tense • Testis cannot be felt	• Usually Small and Lax • Testis can be felt • the disease in the testis, epididymis or cord is revealed • Aspiration reveals exudate (high specific gravity (>1018), high protein content (4-8 gm %). • coagulates due to its fibrin content)

Q. How can you detect secondary vaginal hydrocele?

A.

- By pinching the tunica vaginalis.

Q. What are the complications of hydrocele?

A.

- Complications of hydrocele include:
 1. **Hernia of the hydrocele sac:** in long standing cases the sac might herniate through the Dartos muscles that may rupture.
 2. **Hematocele.**
 3. **Infection.**
 4. **Rupture** usually traumatic but might be spontaneous
 5. **Calcification.**
 6. Bilateral huge cases might lead to **atrophy of the testis**. In unilateral cases → no atrophy as hydrocele distends in wide scrotum.

Q. What are the lines of treatment of 1ry vaginal hydrocele?

A.

- There are two lines of treatment;
 1. **Operation** The ideal treatment
 2. **Aspiration** In unfit patients

Q. What are the operations you know for 1ry vaginal hydrocele?

A.

- There are three known operations;
 1. **Lord's operation** (plication of tunica vaginalis).
 2. **Subtotal excision of the tunica vaginalis:**
 - It is done in cases of:
 - Calcified tunica.
 - Loculated hydrocele.
 - Recurrent hydrocele after eversion of tunica
 3. **Eversion:** May be complicated by recurrence.

Q. How eversion of the tunica prevents recurrence of hydrocele ?

A.

- Eversion makes the parietal layer of tunica albuginea sutured behind the epididymis and so the potential space between the parietal and visceral layers is no more present

Q. What are the complications of aspiration?

A.

- Complications of aspiration include;
 1. Recurrence (100%).
 2. Infection.
 3. Hemorrhage.
 4. Puncture of the testis.

Q. What is the aetiology of congenital hydrocele, infantile hydrocele and congenital inguinal hernia?

A.

- Persistent unobliterated processus vaginalis.
- Which of them will develop is according to:
 - Communication with peritoneal cavity.
 - Size of this communication.

	Congenital inguinal hernia	Congenital hydrocele	Infantile hydrocele
Etiology	• completely persistent unobliterated processus vaginalis	• The completely persistent unobliterated processus vaginalis	• The completely persistent unobliterated processus vaginalis
Communication with peritoneal cavity	• communicates with the peritoneal cavity at the internal ring	• communicates with the peritoneal cavity at the internal ring	• does not communicate with the peritoneal cavity at all
Size of opening	• A large opening that allows the development of a hernia	• A small opening that does not allow development of a hernia	

Q. How do you differentiate clinically between congenital and infantile hydrocele?

- A.**
- From history:-
 - In congenital hydrocele:
Mother tells that the swelling is maximum at the evening and disappear at the early morning (fluctuation in size).
 - In infantile hydrocele:
No fluctuation in size.

Q. How do you explain this?

- A.**
- In congenital hydrocele, the sac communicates with to the peritoneal cavity and that is why it empties its content of fluid into the peritoneal cavity during lying down at night sleep.
 - In infantile hydrocele, on the other hand, the sac is does not communicate with the peritoneal cavity.

Q. How do you differentiate clinically between congenital hydrocele and congenital inguinal hernia?

- A.**
- Congenital inguinal hernia is reducible and increases in size on straining (crying).
 - On the other hand, congenital hydrocele is not reducible and does not increase in size on straining besides its diurnal variation in size.

Q: Can transillumination differentiate between congenital hydrocele and congenital inguinal hernia?

- A**
- No, because both are translucent. Congenital inguinal hernia is translucent due to the thin wall of the sac and the thin wall of the intestine inside.

Q. What are the other intrascrotal cysts you know?

- A.**
- Spermatocoele, Pyocoele, Acute haematocoele, Encysted hydrocele of the cord, Cystic teratoma, Breaking down gumma, Cysts of embryonic remnants of the epididymis.

Q. What is spermatocoele?

- A.**
- It is a retention cyst situated in the head of the epididymis due to obstruction of the vasa efferentia.

Q. How do you differentiate between spermatocoele and 1ry vaginal hydrocele?

A.

The clinical differences include

	Spermatocoele	1ry vaginal hydrocele
The testis	▪ Felt adherent to the lower border Of the cyst	▪ Can not be felt
Transillumination	▪ Opalescent	▪ Translucent
Consistency	▪ Lax cystic	▪ Tense cystic

Q. What do you mean by transillumination is "opalescent" in spermatocoele?

A.

- This word means that the cyst is a midway between translucent and opaque.

Q. How can you explain this type of transillumination in spermatocoele?

A.

- It is due to its content of sperms.

Q. What are the features of encysted hydrocele of the cord?

A.

- It is scrotal swelling.
- Cystic, painless, translucent swelling.
- Separated from the testis by interval.
- It is mobile across the cord.
- Its mobility is restricted on downward traction of the testis. (traction test).

Q. How do you differentiate clinically between hydrocele and varicocoele?

A.

	Hydrocele	Varicocoele
• Consistency	▪ Cystic	▪ Soft
• Compressibility	▪ Not compressible	▪ Compressible
• Elevation of the scrotum	▪ No change in size	▪ Decreases in size
• Transillumination	▪ Translucent	▪ Opaque

Q. How can you differentiate between spermatocele & encysted hydrocele of the cord?

A.

	Spermatocele	Encysted hydrocele of the cord
On transillumination	Opalescent	Translucent
On pulling the testis	Move with it	Restricted mobility
Presence of gap	No gap between it & the testis	Gap between it & testis

Q. How to differentiate between encysted hydrocele of the cord and hydrocele of hernia sac?

A.

- Encysted hydrocele of the cord is separated from the testis by interval and is a purely scrotal swelling while hydrocele of hernia sac is an inguinoscrotal swelling.

Case2: Empty Scrotal Compartment

DD: Undescended testis, ectopic testis, retractile testis

Q. How to differentiate between them?

A.

1. Retractable testis:

- On squatting → testis descends in the scrotum
- Repeated examination on warm water

	2. Undescending testis	3. Ectopic testis
Scrotum	▪ Not well developed with deviation of median scrotal raphe towards the affected side	▪ Well developed
Testis	▪ Difficult to be felt	▪ Can be felt in one of the ectopic sites ▪ It becomes more apparent with contraction of the abdominal muscles
Impulse on cough	▪ There is associated hernia in 90% of cases	▪ Usually not present

Q. What are the causes of undescending testis?

A.

1. Anatomical causes:

- Dysgenesis (small testis)
- Short spermatic cord
- Short testicular artery
- Band of adhesions
- Hernial sac
- Inadequate inguinal canal or rings

2. Hormonal causes

- Pituitary deficiency:
- Deficient maternal gonadotrophin
- Testis not sensitive to gonadotrophin

Q. What is the etiology of ectopic testis?

A.

- The actual cause is unknown
- Lockwood's theory:
 - Rupture gubernaculum testis, so one of the accessory tails is in work → the testis goes to one of the following sites:
 - Superficial inguinal pouch
 - Perineum
 - Root of the penis
 - Femoral triangle

Q. What are the complications of undescended testis?

A.

- Psychological
- Liability to trauma & torsion
- Epididymorchitis due to urinary tract anomalies
- Sterility in bilateral cases:
 - Due to hyalinization of seminiferous tubules, which leads to irreversible destruction by the age of 16 years
- Liability to malignancy (seminoma):
 - 30 times more than normal due to dysgenesis
- Hernia (90% of cases)

Q. What are the investigations to localize the site of ectopic testis?

A.

- **Ultrasound:** simple but not accurate, as the testis is small & solid
- **Laparoscopy:** the best

Q. What is the TTT of undescended testis?

A.

- In bilateral case:
 - Hormonal therapy: HCG 500 units IM twice weekly for 6 weeks, if failed
 - Orchiopexy:
 - Wait 6 months between the 2 sides
 - Done as early as possible to avoid destruction of seminiferous tubules by abdominal heat
 - Methods of orchiopexy:
 - Bivan (non-absorbable sutures & narrowing the neck of the scrotum)
 - De Neto (pouch in Dartos muscle)
- In unilateral cases:
 - We do orchiopexy for the affected side

Browse's introduction to the symptoms & signs of surgical disease/ Ch 13 external genitalia P343-347

- 6 -

**BREAST
SHEET**

Breast Case Sheet

History

Personal H:

- Name
- Age:
 - Fibroadenosis → puberty & menopause
 - Hard fibroadenoma → 20-30 years
 - Soft fibroadenoma → 30-40 years
 - Carcinoma → 40-60 years
- Marital status
- special habits of medical importance
- address, Residence
- Occupation: exposure to radiation
- Menstrual history
 - age of menarche & menopause
 - condition of menses (regularity, amount, duration)
- Lactation → Lactating or not and date of last lactation
- Contraception

Complaint:

بلفظ المريض إليه اللي جابك المستشفى

HPI:

آخر مرة كنتي سليمة امتي

1. Pain

Site, Character, Radiation, What increase or decrease, Onset, Course, Duration, Severity, and what associates.

- **Site** → localized to swelling or shooting distally (tumor compressing the nerve or infiltrating it).

- **Character**

Dull aching pain → chronic conditions.

Throbbing pain → pus formation.

NB: painful breast lesions:

- Fibroadenosis
- Mastitis & breast abscess
- Malignancy (late)

2. Swelling

a) **Site**

b) **Size** → (lemon size, orange size ...)

c) **Onset** ابتداء ازاي

- Accidental

- Gradual

- Acute

d) Course:

- Progressive: → neoplastic swellings.
- Stationary: → chronic inflammation.
- Regressive: → inflammatory conditions.
- Fluctuating: → chronic inflammation with acute exacerbation.

e) Duration: أول مرة لوحظ

- Short: (days or weeks).
- Long: (months or years).
- Since birth → congenital.

f) Effect on the general condition:

- Toxic symptoms: → FAHM
- Malignant symptoms: → cachexia.

g) What increase & what decrease it

h) Apparent cause. → Trauma, pregnancy, or lactation.

3. Disturbance of function

Nipple discharge هل هناك افرازات من الحلمة؟
لونها ايها؟ كميتها؟ من أي ناحية؟

- Character: serous, bloody, milky, pus, pasty
- Color: greenish, bluish, reddish, yellowish
 - Amount
 - Location

Skin changes:

Nipple → Retraction. في تغير في اتجاه الحلمة؟

Areola → Florid red, raised, eroded & may have vesicles
in Paget disease of the breast في حساسية حول الحلمة؟

Skin proper:

- Dimpling
- هل هناك نغرة في صدرك؟
- Skin nodules
- في كلاكيع ظهرت مع الثدي؟
- Fungation, ulceration.
- في أي قرح علي جلد الثدي؟
- Brawny edema
- في أي ورم في الذراع؟
- Sister Joseph nodules.
- في كلكوعة في السرة؟

4. Other systems

Distant metastasis

- 1- Lung: chest pain, dyspnea, cough, and haemoptysis.
- 2- Liver: jaundice, swelling and pain in Rt. Hypochondrium.
- 3- Bone: bony pain, swelling or pathological fracture.

5. History of investigations or medications

Past history

- Similar attacks.
- Common diseases: (**DM**, **Hypertension**, **TB**, **B**, **Hepatitis**, **DVT**)
- Drug allergy & intake
- Blood transfusion
- Previous Operations

Family history

- Similar condition in one of the members of the family (e.g. carcinoma)
- Consanguinity

Browse's introduction to the symptoms & signs of surgical disease/ Ch 12 the breast P312

Examination

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

General:

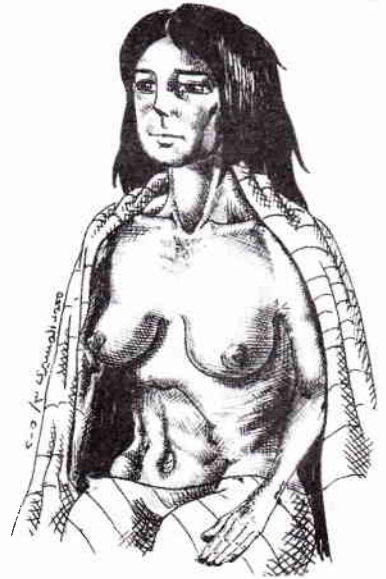
- اسطمية 3 {
- Body built.
 - Decubitus
 - Facial expressions.
 - Complexion → (**3 colors**) Jaundice, pallor & cyanosis.
pallor → anemia
- حاجات 3 {
- Chest & heart
Lung metastasis, masses or tenderness
 - Abdomen.
(Liver, spleen, ascites, Sister Joseph, aortic & iliac LNs
PR & PV examination → masses e.g. Krukenberg tumor
 - Extremities
UL → brawny edema – Pathological fractures
 - Pulse, blood pressure & temperature
fever → in breast abscess
 - **Head, Neck, Spine → 3 تانيين**
 - **Head:**
 - Skull for metastasis
 - Jaundice: liver metastasis
 - Cyanosis: mediastinal LN
 - **Spine →** for metastasis.

Local: سلم على العيانة و قف على يمينها

Exposure

- From above to umbilicus (upper limbs are exposed)
- Umbilicus exposed: Sister Jossif sign (metastasis in umbilicus.)
- Upper limbs exposed: axillary LN
- The patient is examined while sitting
- Both sides are examined and compared

Starting with the normal

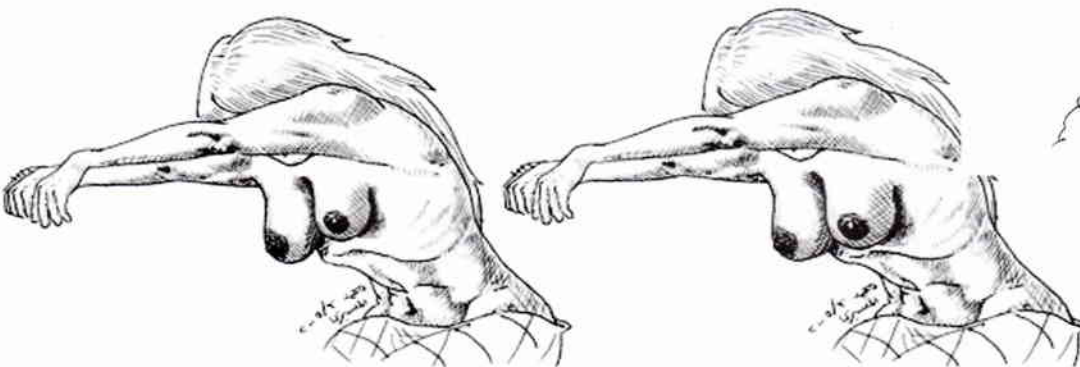


Inspection (sitting only)

**From 2 different planes +
under surface of the breast**

مع كلمة السر (ارفعى ايديك لفوق، مدي ايديك للأمام)

Ask the patient to lean forward (observe degree of protrusion of breast) then ask her to raise the arms (dimpling, lump or skin changes becomes more prominent)



(Notice that both breasts are pendulus)

Both breast are symmetrical overlying skin is normal, no pigmentation, no dilated veins, no scars. With apparent swelling at ..., with sizeshape of.....

1. Swelling:

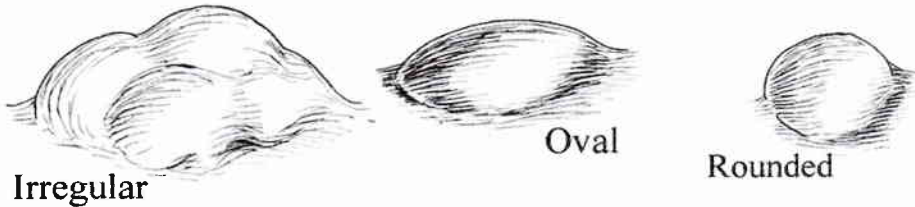
1. Site

- The anatomical region of the swelling

2. Size

- In cm (best)

3. Shape



2. Skin:

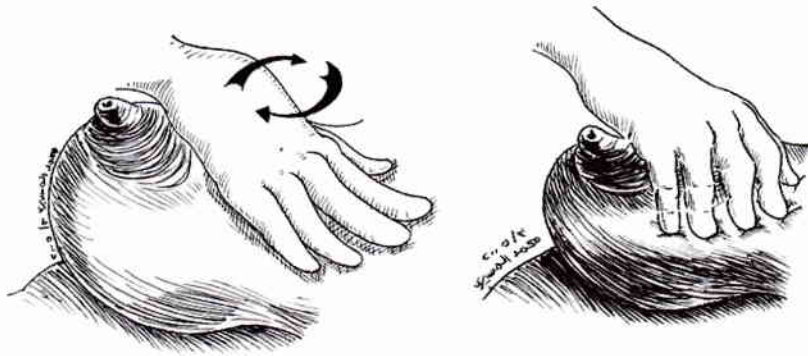
- Normal, Stretched, Pigmented,
- Show sign of inflammation (redness, edematous...),
- Dilated veins, Ulcer, Scar...
 - **Nipple:** Direction, Retraction, Displacement, Discoloration
 - **Areola:** eczema.
 - **Skin proper:**
 - Dimpling
 - Pau de orange
 - Umbilicus (Sister Josef)
 - UL & Lymphedema. (Brawny edema).

- **Discharge:** (يطلب من المريضة تعصير الثدي)

Palpation (sitting then lying)



سبع مناطق بالـ flat of hand و الـ tip of fingers مع تعصير صدر العيانة
(يجب أن تكون العيانة نائمة مع وضع وسادة تحت كتف الناحية التي يتم فحصها)

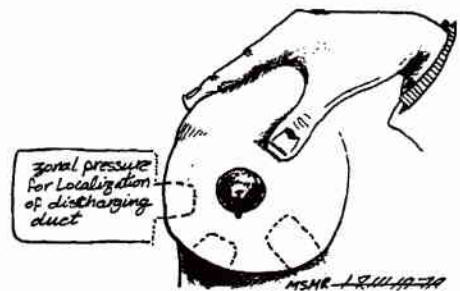
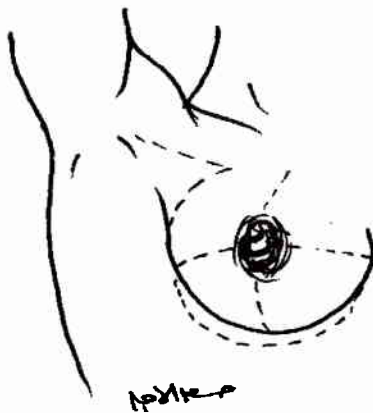


7 compartments:

- 4 compartments in breast →
 - (upper inner)
 - (Upper outer)
 - (Lower inner)
 - (Lower outer)
- Nipple and areola.
- Axillary tail.
- Infra-mammary.

خلال الفحص عند وجود Mass أكتم عليها لغاية ما أكمل الفحص ثم ارجع للـ **Swelling**

Ask the patient to squeeze her breast if there is bloody discharge. Zonal pressure is done



1. Warmth:

حركة بظهر اليد

2. Tenderness:

حركة ببطن اليد و عيني على وجه العيانة

- Inflammatory swellings are mostly tender
- Neoplastic swellings are not tender.
- How to locate the point of maximum tenderness?

3. Edge:

حركة بجانب اليد
Ill-defined, Well-defined.

4. Surface:

- Smooth, granular, nodular,.etc.

5. Consistency : حركة باليدين

- **Cystic or solid.**
- **Fluctuation test:**
 - in 2 perpendicular planes
 - Fixation is a must.
- **Paget's test:**
 - For swellings < 2 cm
 - A solid swelling → hard centre more than periphery
 - A cystic swelling → Yielding center, firm periphery
- **Solid swelling may be**
 - Solid and soft → like a lobule of the ear.
 - Solid & firm → like ear pinna.
 - Solid & fleshy → like relaxed muscle.
 - Solid & hard → like bone.

6. Relations (mobility) :

a) Skin:

- Not related to overlying skin → skin can be pinched
- Infiltrates the skin → moves with movement of skin.
- Nipple & areola

b) Breast Tissue

Fix the breast tissues by one hand and move the swelling by another hand

c) Muscle: → Ms contraction:

❖ **pectoralis major:**

Compare the range of movement of the lump before & after contraction of the muscle by asking the pt. to press by her hands against her waist:

- Attached to pectoral fascia → limited movement but not fixed
- Attached to muscle → fixed
- Not attached → Mobile

❖ **Serratus anterior:**

Compare the range of movement of the lump (in the lower lateral quadrant) before & after contraction of the muscle by asking the pt. to press against your shoulder or on the wall

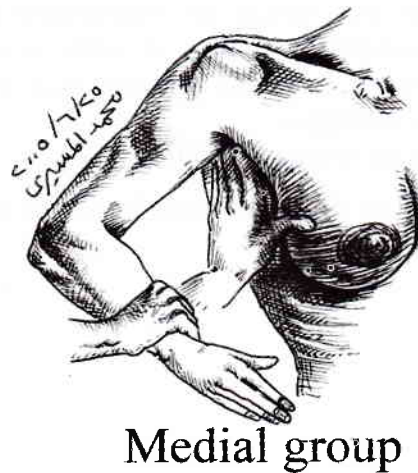
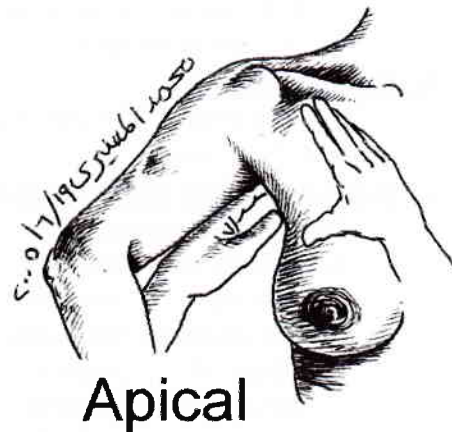
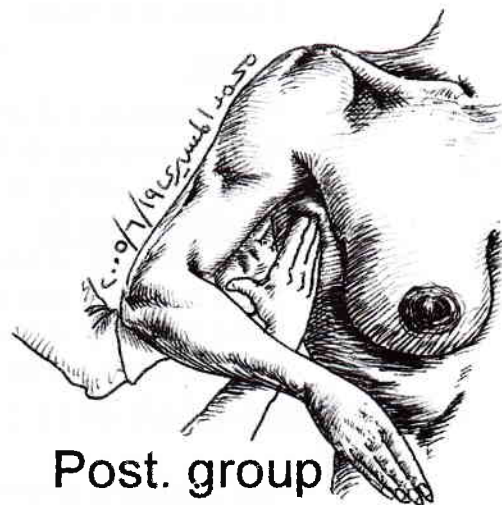
❖ **External oblique:**

- Can't be tested if infiltrated

d) Bones: → fixed and immobile from the start (while the pt. is relaxed)

7. Draining Lymph Nodes (Axillary & Supraclavicular):

No examination of a swelling is complete without the examination of the draining LNs (See lymphatic sheet)



The pectoralis major

Origin: sternocostal head,
clavicular head

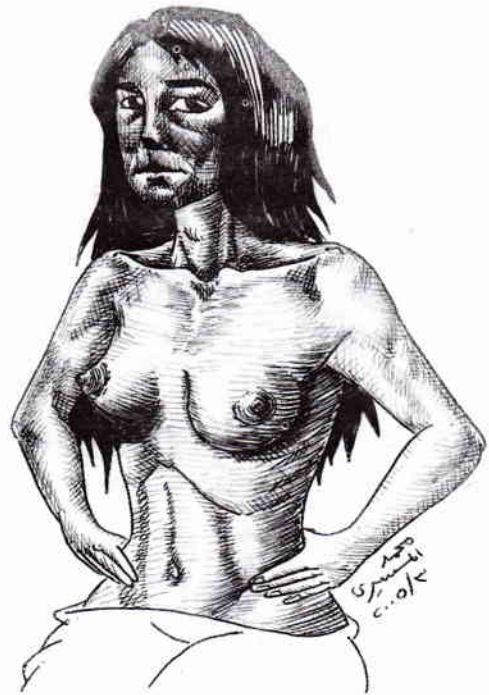
Insertion: lateral lip of bicipital
groove.

N.S: medial & lateral pectoral
n.(from med. & lat.
cords of brachial plexus
respectively).

Action: to press her hands
against her waist.

So ask the patient: to press her
hands against her
waist.

حتى إيديك في وسطك (حركة الألاطة)



The serratus anterior

Origin: 8 digitations with upper
8 intercostal muscles.

Insertion: med. Border of the
scapula.

NS: N. to serratus ant. from
roots C5, 6, 7, (=Long thoracic
n., =N. of Bell)

Action: keeps the stability of
scapula with the Use of upper
limb.

So ask the patient: to press
her hands against your shoulder
and show and examine. زقى

بايديك كتفى



Others are the external oblique, rectus sheath

Special Investigations

Laboratory Investigations:

Hb%, urine and stool analysis, blood sugar, blood urea.
Tumor markers (estrogen & progesterone receptors)

Pathological Investigations:

Biopsy (FNAPC, tru-cut needle, Open)
Cytology from discharge

Radiological Investigations:

Plain & contrast X- ray, Mammography, Glactography, U/S, CT

Provisional Diagnosis

Anatomical → It is diagnosis of the region

Pathological → Congenital, traumatic, inflammatory, neoplasticetc.

Associated conditions → T.B., diabetes, chronic bronchitis, Ascites....etc.

Questions & Answers

Breast Lump

❖ Embryological considerations:

Q. What is the embryology of the breast?

- A.
- It arises from the milk line which extends from the axilla to the mid- inguinal point.
 - It is considered to be a modified sweat gland
 - It is formed of:
 - Epithelial element from ectoderm
 - The connective tissue from mesoderm
 - The nipple is at first flat or retracted at birth then it becomes protruded

❖ Anatomical considerations:

Q. What is the anatomy of the breast?

A.

Extent:

- It extends from the 2nd to the 6th rib.
- It extends from the sternum to the mid axillary line.
- It lies superficial to deep fascia.
- Axillary tail of Spence passes deep to the deep fascia
- The opening in the deep fascia is known as foramen of Langer at the level of the third rib.
- Nipple protrude forward , downward and lateral , at the level of 4th intercostal space , it gets lower by age
- Areola : dark area of skin , becomes more pigmented with pregnancy, MSH

It lies over

1. The pectoralis major (2/3):

- **Origin:** sternocostal head, clavicular head
- **Insertion:** lateral lip of bicipital groove.
- **N.S:** medial & lateral pectoral n. (from med. & lat. cords of brachial plexus respectively).
- **Action:** to press her hands against her waist.

2. The serratus anterior (1/3):

- **Origin:** 8 digitations with upper 8 intercostal muscles.
- **Insertion:** med. Border of the scapula.
- **NS:** N. to serratus ant. from roots C₅, 6, 7, (=Long thoracic n., =N. of Bell)
- **Action:** keeps the stability of scapula with the Use of upper limb.

3. Others are the external oblique, rectus sheath

Architecture of the gland:

- The breast is formed of :
 1. Fibro fatty tissue.
 2. Acini which makes up lobules & lobes.
- The lobes of the gland are radially arranged.
- Each lobe is drained by a separate duct.
- All the collecting ducts (10 - 15) open into the nipple.
- Lobes and ducts are arranged radially so , in abscess → radial incision to ↓↓damage of lobes and ducts .
- Any fibrosis affect breast
 - In cooper ligament → dimpling.
 - In lactiferous duct → retracted nipple.

Ligaments of Cooper: suspensory ligament of the breast

- Bands of connective tissue called Ligaments of Copper.
- It is between the overlying skin & the pectoral fascia.

Blood Supply of the Breast:

⇒ Arterial supply

- The lateral thoracic artery
 - From 2nd part of the axillary artery.
- The medial perforators
 - From the internal mammary artery in the 2nd, 3rd & 4th spaces.
 - The internal mammary artery arises from subclavian artery.
- Lateral perforators
 - From the 2nd, 3rd & 4th intercostal arteries

⇒ Venous Drainage

- Superficial. veins → Cross midline.
- Deep veins → accompany the arteries.
- Intercostal veins
 - Drain into azygus system on the rt. side & hemiazygus on the Lt. Side.
 - They are communicating with the para-vertebral veins.

⇒ Lymph drainage:

- Nipple & areola + Breast tissue → (Ant. Axillary LNs → Medial group of LNs → Apical LN (subareolar lymph plexus of sappy))
- Skin without Nipple & areola → Radial manner
- Deep part of Breast → lymphatics through pectoralis major → internal mammary LN & post. intercostal LN (deep pectoral lymph plexus on pectoralis minor)
- Lower medial part → Lymphatics in rectus sheath & falciform lig. → metastasis in Liver

The axillary groups of lymph nodes:

1. Pectoral group (Ant.) →
 - Behind the pectoralis major.
 - Drains : breast, chest above the level of umbilicus of corresponding side
2. Humoral group (Lat.) →
 - It lies along the axillary vein.
 - Drains the upper limb
3. Subscapular group (Post.) →
 - It lies over the subscapularis muscle.
 - Drains posterior abdominal wall above the umbilicus of the corresponding side
4. Central group (Med.) →
 - It lies over the medial wall & floor of axilla.
 - It is the station before apical LN affection
 - If affected → Compress intercostobrachial nerve causes pain in upper limb
5. infraclavicular (Apical group) →
 - At the apex of the axilla.
 - The last station and may receive lymph vessels directly from the breast

N.B:

⇒ The Axillary fascial tent

In patient lying on his back with the arm abducted :

1. Anteriorly: clavipectoral fascia which fuses with fascia of axillary vessels
2. Posteriorly : on subscapularies
3. Apex : upward and medially
4. Base : downward and laterally and is open

⇒ In block dissection of axilla we reserve this tent

Q. Mention the congenital anomalies of the breast you know?

A.

➤ Nipple anomalies:

- **Athelia** → absence of the nipple.
- **Polythelia** → multiple nipples not necessary along the milk line
- **Retracted nipple**

➤ Abnormal number:

- **Amazia** → absence of the breast & usually the pectoralis major is not developed
- **Polymazia** → multiple breasts may be present along the milk line.

➤ Virginal hypertrophy: which is abnormal response of breast tissue to estrogen. TTT: by reduction mammoplasty or augmentation depending upon the patient

Q. Mention the types of breast inflammations not related to lactation?

A.

• Mastitis neonatorum:

- It is enlargement of breast of newly born.
- It is due to estrogen of the mother.
- TTT: leave him alone as it is self-limited.

• Mastitis of puberty

- It is a painful enlarged tender breast at 14 years.
- It may be unilateral or bilateral.
- Self-limited.

• Premammary abscess

- Infection of MONTGOMERY gland.
- TTT: incision & drainage.

• Retromammary abscess

- Deep to pectoral fascia.
- Due to infected rib (osteomyelitis) or infected haematoma or tuberculous empyema.
- Drainage by Thomas incision in the mammary groove.

• Abscess on top of traumatic fat necrosis or hematoma.

• Traumatic mastitis:

- Due to ill-fit brassier

• Secondary infection of hematoma or tumor:

Q. What are the types of breast inflammations related to lactation?

A.

- Milk congestion and acute lactational mastitis.

Q. What is milk congestion and what are its causes?

A.

Accumulation of milk in the breast, and its causes are:

- At the start of lactation due to lack of experience of the mother
- During teething of the baby due to cracking in the nipple
- During weaning

Q. What is the clinical feature of milk congestion?

A.

- Pain
- Swelling
- No pus on squeezing

N.B: fever may be present due to sequestered antigens (milk)

Q. How you treat a case of milk congestion?

A

- Regular nursing after the baby.
- TTT of crackles.
- evacuation of the breast by electric pump or manual

Q. What is pathogenesis of traumatic fat necrosis?

A.

- Trauma to fat → Glycerol (absorbed)
→ Fatty acids: chelates Ca → (soap)
- This soap invites foreign body reaction.
- The result is one of 2 forms:
 - 1- A cyst that contain thick oily fluid.
 - 2- A hard mass (less frequent) that resemble breast carcinoma and require biopsy to settle the diagnosis

Q. What is the clinical picture of traumatic fat necrosis?

A.

- Hard, irregular, painless mass. History of trauma may be present.

NB:

This enter in the DD of breast carcinoma as the mass is hard and if occurs near cooper's ligament → dimpling or near milk duct → retracted nipple.

Q. What is the treatment of traumatic fat necrosis?

A.

- Excisional biopsy.

Case 1: Fibroadenosis

Q. What are the different names of fibroadenosis?

A.

- 1) ANDI → aberration in normal development & involution of breast.
- 2) Fibrocystic disease of the breast.
- 3) Sector mastitis.
- 4) Mammary dysplasia.
- 5) Chronic interstitial mastitis → misnomer as in this condition there is no evidence of inflammation.

Q. What is the clinical picture of fibroadenosis?

A.

⇒ Type of patient:

- It occurs after puberty or before menopause, multiple painful lumps that may be unilateral or bilateral and it is related to menstrual cycle.

⇒ Symptoms:

- It may be completely **asymptomatic**.
- These changes are usually **CYCLIC**.

1- Breast pain (Mastalgia, Mastodynia):

- Exaggerated pre-menstrual tension
- Dull aching or stitching pain
- ↑ Pre-menstrually & by breast movement & ↓ post-menstrually & by breast support.

2- Breast lump (Cysts or sclerosing adenosis):

- May disappear when the patient is reexamined 1 week after menstrual cycle

3- Breast discharge:

- Usually clear or yellow.
- Sometimes brown or green.

⇒ Local Examination:

1- Breast Lump:

- May be solid or cystic, freely mobile, commonly bilateral and diffuse.
- **Better to be felt by tip of fingers not by flat of the hand.**
- You feel as there is disk of glandular tissue deep in the breast , away from nipple and areola.

2- Discharge:

- With gentle squeeze.
- Colorless fluid or blue greenish discharge.

3- Axillary LNs:

- May be elastic, enlarged, tender and mobile with shotty distribution.
- Sector mastitis (theory → viral infection , or chemical irritant).

Q. What is the pathology of fibroadenosis?

A.

⇒ It is Characterized by:

1. **Adenosis** → Glandular hyperplasia with ↑ number of acini.
2. **Fibrosis** → fibrous tissue replaces elastic & fatty tissue
3. Fibrosis → obstructs duct → retention cyst formation.
4. It may be unilateral or bilateral or affecting **sector** of breast.
5. **Epitheliosis** → Epithelial hyperplasia in small ducts.
6. Extensive epitheliosis → intra-ductal papillary growth which is termed **papillomatosis**
7. Rarely, there's "**Atypical epithelial hyperplasia**" → precancerous
8. Extensive fibrosis may resemble schirrous carcinoma & called "**sclerosing adenosis**"
9. Round cell infiltration.
10. **Cyst formation** → The cyst might be:
 - Small (microcyst).
 - Large macrocyst.
 - The cysts may coalesce to form (blue domed Cyst of Bloodgood): A large cyst contains altered blood.

⇒ It is NOT Precancerous:

- Most of the surgeons:
 - Consider the fibroadenosis not precancerous.
 - Except if there is marked papillomatosis or atypical epithelial hyperplasia.

Q. What is the treatment of fibroadenosis?

A.

Reassurance of the patient from cancer phobia is the most important

A. Change life-style:

1. Firm bra.
2. Avoid coffee, tea and chocolate.
3. Regular intake of 400 IU of vitamin E may be helpful.

B. Medical treatment:

1. Analgesic.
2. Regulation of the cycle.
3. Prim-rose oil single evening dose.
4. Parlodel 2.5 mg tab/twice /day (anti prolactin).
5. Danazol tab!!! (last line of TTT as it causes acne & hirsutism)
6. Psychotherapy.

C. Indication of the surgery:

1. **Biopsy** → if doubtful diagnosis.
2. **Excision of the cyst** → large cyst (cyst of Bloodgood).
3. Cysts are treated by aspiration; recurrent cysts are excised for biopsy.

Browse's introduction to the symptoms & signs of surgical disease/ Ch 12 the breast323

Case 2: Benign breast tumors

I. Duct papilloma

Q. What is the clinical picture of duct papilloma ?

A.

Type of Patient

- 30-40 years female with **bleeding per nipple**.

Symptoms

1. Blood stained nipple discharge.
(Commonest symptom).
2. Swelling → retention cyst.

Signs: No pain.

1. Bleeding per nipple:

- By pressure on the swelling.
- If there is no palpable swelling, **zonal pressure** will reveal the discharge.

2. Swelling:

- Small, fusiform, usually lateral to the areola with its long axis pointing to the nipple.

3. Axillary LNs: are not enlarged.

Q. What is the treatment of duct papilloma?

A.

- It's a **pre-cancerous**, so the treatment is:

1. **Micro-dochectomy** (remove the affected duct) through circumareolar incision and wedge of the tissue 2.5 cm around it.
2. Histopathology.

Q. How can you identify the affected duct intraoperatively?

A.

- 1- By the lump.
- 2- If there is no lump, the duct is identified by passing needle through the discharging nipple opening.

2. Fibroadenoma

Q. What are the types of fibroadenoma?

A.

Peri-canalicular (Hard)	Intra-canalicular (Soft)
<u>Age:</u> 20-30 years	<u>Age:</u> 30-50 years
<u>Macroscopic picture:</u> <u>Size:</u> small <u>Surface:</u> smooth. <u>Color:</u> whitish <u>Consistency:</u> firm or hard. <u>Cut section:</u> whorly appearance. <u>Capsule:</u> 2 capsules true and false capsule and a pedicle.	<u>Macroscopic picture:</u> <u>Size:</u> large <u>Surface:</u> lobulated. <u>Color:</u> whitish <u>Consistency:</u> soft <u>Cut section:</u> might show central necrosis <u>Capsule:</u> incomplete capsule.
<u>Microscopic picture:</u> - Formed mainly of fibrous tissue - Fibrous tissue proliferation occurs around the acini & ducts.	<u>Microscopic picture:</u> - Contains more glands - Fibrous tissue proliferation invaginates the ducts.
<u>Complication:</u> Never turn malignant.	<u>Complication:</u> Liable to turn to sarcoma.

Q. What is the clinical picture of fibroadenoma?

A:

Type of Patient

- 1- Hard fibroadeonoma 20 – 30 years female.
- 2- Soft fibroadenoma 30-50 years female.

Symptoms

- Painless lump that is discovered accidentally.

Signs

1. Breast swelling:
 - i- Peri-canalicular:
 - Usually small, non tender, firm, well-circumscribed with smooth surface & with **high mobility** in breast tissue (**breast mouse**).
 - ii- Intra-canalicular
 - May reach huge size, soft, mobile swelling in breast.
2. Axillary LNs: not enlarged.

Q. What is cystosarcoma phylloides?

A.

- It is a type of soft fibroadenoma (giant intracanalicular fibroadenoma).
characterized by:
 - 1- Highly cellular.
 - 2- Rapidly growing and reaching a large size (20 – 30 cm).
 - 3- It might ulcerate through skin but not attached to it.
- The name cystosarcoma phylloids (is a wrong name):
 - Cyst: may be cystic degeneration if hugely enlarged due to insufficient blood supply (but usually it is not cystic)
 - Sarcoma: it is rarely malignant.
 - Phylloids: the cut surface resembles leaf.
 - So, it is better named "Phylloides Tumor"

Q. What is the treatment of fibroadenoma?

1. For peri-canalicular:
 - It is enucleated through circum-areolar incision.
2. For intra-canalicular:
 - If small, excision is better with a part of the normal breast tissue as a safety margin.
 - If large (Cystosarcoma phylloides) → wide local excision (to prevent recurrence) or if the tumor is occupying the whole breast → simple mastectomy.

Browse's introduction to the symptoms & signs of surgical disease/ Ch 12 the breast P322

Case3: Cancer Breast

Q. What is the diagnosis?

A. This is a case of breast lump, clinically a carcinoma of the breast stage II.

Q. How did you reach this diagnosis?

- A.**
- **From History:** there is painless mass of short duration, rapidly progressive course
 - **Examination:** there is hard swelling, felt by both finger tips and flat of the hand, fixed to breast tissue and to pectoralis major, presence of skin manifestations of cancer breast, presence of hard axillary lymph nodes.

Q. Mention the incidence of breast cancer?

- A.**
- In western countries accounting 3-5 % of deaths.
 - Breast cancer is the commonest malignancy in Egyptian females (35% of total malignancies).

Q. What are the predisposing factors of cancer breast?

A.
1. Genetic Factors:

- a) It has been proven that 5 - 10 % of breast cancers are due to mutation in suppressor genes (autosomal inheritance)
 1. Mutation in 2 suppressor genes:
BRCA-I (on chromosome 17) & BRCA-II (On chromosome 13)
It usually occurs:
 - At younger age
 - Multifocal & bilateral
 2. Mutation in tumor suppressor gene P53: producing Le Fraumini \$
 - Breast cancer.
 - Ovarian cancer.
 - Carcinoma of the colon.
 - Lymphoma (or leukemia).
- b) Positive family history increases the risk:
 - In mother or sister → ↑ the risk by 2.3 times.
 - In both mother & sister → ↑ the risk 14 times.

2. Endocrinal factors:

- The longer the period of exposure to unopposed estrogen, the more the risk of developing breast cancer as in:
 - A. Early menarche (< 12 years).
 - B. Late menopause (> 50 years)
 - C. First pregnancy occurs after the age of 30 years.
 - D. Oral contraceptive pills & hormonal replacement therapy (HRT) their role is not yet known.

3. Precancerous lesions:

- 1) Duct papilloma (especially if multiple) → ↑ the risk 1.5 – 2 times.
- 2) Atypical epithelial hyperplasia → ↑ the risk 2 - 5 times.
- 3) Lobular or ductal carcinoma in situ → ↑ the risk by 5 – 10 times.

4. Obesity & ↑ fat intake:

- As there is peripheral conversion of steroid hormones into estradiol (E₁) by aromatase enzyme in fatty tissues.

5. Previous affection with cancer breast:

- Patient with breast cancer in one side, ↑ the risk to develop cancer in the other breast.
- Bilateral breast cancer occurs in about 15 – 20 %.
(Up to 25 – 50 % if in lobular carcinoma)

6. Race:

- More in white women than Asian or Africans

7. Radiation therapy to the chest:

- Women who had radiation therapy to the chest (including breasts) before age of 30 are at an increased risk of cancer breast.

8. Alcoholic intake:

- It increase the risk of cancer breast

9. Physical inactivity:

- Women who are physically inactive have an increased risk of breast cancer, because physical activities may help to reduce risk by preventing weight gain.

Q. When fibrocystic disease is considered precancerous?

A.

⇒ It is NOT Precancerous:

▪ Most of the surgeons:

- Consider the fibroadenosis not precancerous.
- Except if there is marked papillomatosis or atypical epithelial hyperplasia.

Hyperplasia and papillomatosis increase risk of malignancy 1.5-2 times but atypical hyperplasia increases risk of malignancy 5 times

Q. Give the sites of breast cancer and their incidence?

A.

- Upper outer quadrant 60%.
- Upper inner quadrant 12%.
- Lower outer quadrant 10%.
- Lower inner quadrant 6%.
- Areola and nipple 12%.

Q. Mention the classification of cancer breast?

A.

Histological types of carcinoma of the breast

A- Carcinoma of the Duct Origin (Ductal Carcinoma):

- *Non infiltrating i.e. Ductal carcinoma in situ.*
 - Solid
 - Cribriform
 - Comedo
- *Infiltrating Ductal carcinoma (not otherwise specified)*
 - Special subtypes
 - Medullary carcinoma.
 - Mastitis carcinomatosis.
 - Comedo carcinoma.
 - Colloid carcinoma (mucinous). (it has good prognosis in the breast unlike GIT colloid carcinoma which has bad prognosis)
 - Papillary carcinoma.
 - Tubular carcinoma (good differentiation)

B- Carcinoma of Lobule Origin (Lobular Carcinoma).

- *Non infiltrating* i.e. lobular carcinoma in situ. (it usually arise from minute ducts in the lobes , rarely from the acinar cells
- *Infiltrating.*

C- Carcinoma of the nipple (Paget's disease of Nipple).

Q. What are the differences between Paget's disease of the nipple & eczema of the nipple?

A.

Eczema	Paget's disease
Bilateral	Unilateral
Young lactating female	Old non-lactating
itching	No itching
Intact nipple	Eroded nipple
No lumps	May be on underlying lump
Responds to short term steroids	Not responding to treatment

Q. What are the skin manifestations of cancer breast?

A.

a. Nipple:

▪ **Nipple Retraction:**

- Due to infiltration of milk duct.
- **Not diagnostic** as it occurs in any fibrotic process e.g. chronic breast abscess & duct ectazia.

b. Areola: eroded in paget's disease of the nipple.

c. Skin proper:

▪ **Skin Dimpling:**

- It's the **earliest** skin sign.
- Due to contracture of **Cooper's ligament**
- **Not diagnostic** as it occurs in any fibrotic process e.g. chronic breast abscess & duct ectazia.

▪ **Skin Puckering.**

▪ **Cancer en Cuirasse:**

- Late stage of retrograde lymphatic permeation.
- Skin is very **thick, leathery, brownish & metallic** simulating shields of war

▪ **Skin Ulceration:**

- Can be differentiated from benign tumors by probing test.

▪ **Peau d'orange:**

- Due to obstruction of lymphatics so lymphoedema of skin occurs except at site of hair follicles & sweat glands.

▪ **Skin Nodules:**

- May appear away from mother carcinoma.
- Due to retrograde lymphatic permeation.
- **Diagnostic** (sure sign of malignancy).

▪ **Sister Joseph Nodules:**

- Lymphatic spread to umbilicus.

▪ **Brawny Edema (Lymphoedema of the Arm):**

⇒ Due to:

○ Obstruction of lymph. Vessels by:

- Tumor metastasis
- Surgical.
- Irradiation.

○ Obstruction of axillary vein.

▪ **Special forms:**

○ Mastitis carcinomatosa: Skin is red, warm & edematous.

Q. What is the earliest skin manifestation?

A.

- Dimpling and puckering.

Q. What is the pathogenesis of dimpling and puckering? And is it pathognomonic of breast cancer?

A.

- Contracture of the Cooper's ligament caused by surrounding fibrosis.
- No, it can occur in any fibrotic process e.g. chronic breast abscess.

Q. How can you better see the presence of dimpling and puckering of breast skin?

A.

- They can be better seen if the patient raises her arm up.

Q. What is the pathogenesis of retraction of the nipple?

A.

- It is due to entangling of the milk ducts by fibrosis.
- Again it is not pathognomonic of cancer breast, as it can occur with any fibrotic lesion.

Q. What is Peau d'orange? And what is its pathogenesis? and is it pathognomonic of breast cancer?

A.

- It is edema of the breast skin pitted at sites of hair follicles and sebaceous and sweat glands.
- It is due to obstruction of the lymphatics of the skin caused by a surrounding tumor or fibrosis.
- No, it can occur in any fibrotic process e.g. chronic breast abscess.

Q. How can it be rendered more obvious?

A.

- By gently squeezing the skin.

Q. What is cancer en cuirasse?

A.

- It is a late sign of cancer breast where the skin becomes hard, thick, indurated, stretched, like the shields of wars.
- It extends outside the breast to the chest and arms.

Q. Describe tethering and fixation of the breast lump to the skin?

A.

- Both tethering and fixation indicate adherence (attachment) of the tumor to the skin. In tethering, moving the lump, outside its arc of mobility, causes the skin to indent.
- On the other hand. In fixity, the lump cannot be moved at all without moving the skin.

Q. What are the different causes of brawny edema of upper limb?

A.

- Obstruction of lymph. Vessels by either
 - Tumor metastasis
 - Surgical
 - Irradiation
 - Obstruction of axillary vein by tumor, or infection, or surgical removal

Q. Describe the lymphatic spread of cancer breast

A.

- Lymphatic spread is by embolisation and permeation to the following L.Ns.:
 1. Axillary lymph nodes (75%)
 2. Internal mammary (minimal)
 3. Posterior intercostal (minimal)
 4. Occasional lymph nodes
 - a) Supraclavicular L.Ns.
 - b) Interpectoral L.N. of Rotor

Q. Why do you palpate the under surface of the lump?

A.

- Because it is rounded in benign lesion & flat in carcinoma

Q. How to know that a breast lump is fixed to the breast tissue?

A.

- By holding the breast by one hand and trying to move the lump within the breast by the other hand in two perpendicular directions.

Q. How to know that a breast lump is fixed to the pectoral muscles?

A.

- By moving the lump while the patient is pressing with her hands against her waist. If the mobility of the lump becomes restricted, then it is attached to the muscle.

Q. How to know that a breast lump is fixed to the chest wall?

A.

- The breast lump is not mobile in both directions from the start.

Q. What are the investigations of a case of cancer breast?

A.

1. For Diagnosis

1. Soft tissue mammography: *(To evaluate the whole breast and other breast)*

2. Ultra Sonography: *(Differentiate solid tumors from cystic)*

⇒ For cystic swelling we do: Aspiration

The criteria of malignant cyst is

- Irregular wall.
- Hemorrhagic fluid.
- Rapid refilling.
- Residual mass after aspiration.
- Malignant cells in the aspirate.

⇒ For solid swelling we do: FNABC

3. Biopsy:

- a) FNABC: simple, inexpensive and very accurate.
- b) Core-cut biopsy.
- c) Open biopsy.

4. MRI of breast:

- Gold standard of woman with synthetic prosthesis.

2. For Staging

1. Sentinel Lymph Node Study:

- By injection of methylene blue or radioactive isotope → follow-up → till we find the sentinel lymph node.
- Then it is excised and frozen section is done for it to know whether affected by the cancer or not.

2. Lung → CXR.

3. Liver → abdominal ultra sound and liver function tests.

4. Bone → bone scan (Tc 99).

5. Brain → CT scan and MRI.

3. For Pre-operative Preparation

- CBC, FBS, LFTs, KFTs.

4. For Follow-up

1. Tumor markers: CA15-3 and CEA.

2. Biochemical investigations (hormonal receptors): estrogen and progesterone.

Q. What are the indication & value of mammography in the diagnosis of cancer breast?

A.

Indications are:

1. Screening of high risk patient.
2. When there is pain, nipple discharge or axillary L.N with no palpable mass.
3. To identify contralateral breast lesion or other multifocal lesion in the same breast after +ve biopsy.

Value in diagnosis of breast cancer:

1. Mammography may show some radiological findings in cancer breast, e.g. microcalcifications, star-shaped mass, swelling larger than the surroundings. However, these changes are not conclusive of cancer breast.

Q. What are the disadvantages of mammography?

A.

- Exposure to irradiation
- False -ve results
- False +ve results
- It is less sensitive in young ladies due to ↑ breast density ,

Q. What is the value of Duplex sonography in the diagnosis of cancer breast?

A.

- Duplex sonography of the breast reveals a characteristic pattern of vasculature in cases of cancer breast.
- However, there is still false -ve and false +ve results. U/S is better in young ladies so it is better to do for all ladies mammography + complementary U/S.

Q. What is the value of MRI in detecting recurrence after surgery?

A

Can detect recurrence after 4 months after surgery because early there is excess fibrosis and granulation tissue, it can detect recurrence better than mammography

Q. What are the out lines of cancer breast treatment?

A.

Outline of Breast Cancer Treatment

	<i>Early breast cancer (Potentially curable)</i>	<i>Advanced breast cancer (Incurable)</i>
Definition	T ₂ N ₁ Mo or less Manchester stage I or II	More than T ₂ N ₁ Mo Manchester stage III or IV
Aim	Cure	Palliation
Disease status	Mainly local disease ± micro-metastasis	Mainly systemic disease
Primary treatment	Surgery ± radio-therapy (Local treatment)	Chemotherapy & endocrinal therapy (Systemic treatment)
Adjuvant treatment (Palliative)	Endocrinal & chemotherapy	Simple mastectomy & radio-therapy have limited role in local control

Q. Mention the different operations that can be done in operable cancer breast?

A

1. Extended radical mastectomy (Not done now)
2. Radical mastectomy (Halsted) (not done now)
3. Modified radical mastectomy
4. Simple mastectomy + radiotherapy (McWirtter's technique not done now)
5. Lumpectomy + radiotherapy to breast, & draining lymph nodes
6. QUART (Quadrentectomy + Axillary dissection + Radiotherapy to remaining breast & remaining lymph node areas)

Q. What is the aim of modified radical mastectomy?

A.

- The aim is to remove:
 1. The skin ellipse of 5 cm around the tumour including nipple & areola +
 2. Whole breast +
 3. Fascia from lower border of clavicle above to & including the upper quarter of rectus sheath below and from the sternum medially to the anterior border of latissimus dorsi muscle laterally +
 4. All the fat, fascia & lymph nodes of the axilla.

NB. Pectoralis minor is either removed (Patey's technique) or just divided (Auchincloss's technique) or left (Maden)

Q. What is the "conservative breast surgery" and when it can be done?

A.

- Conservative breast surgery includes:
 - a. Lumpectomy* + Radiotherapy to the breast, & draining lymph nodes
 - b. Lumpectomy + Axillary dissection + Radiotherapy to the remaining breast & remaining lymph node areas)
- They can be done in some cases of operable breast cancer when the following criteria can be fulfilled:
 1. The tumour size should be less than 4 cm in diameter.
 2. Breast size should be sufficient to enable tumour excision without considerable deformity
 3. The tumor should not be subareolar or the Paget's variety of cancer breast (cannot be removed without causing deformity)
 4. No detectable multifocality.
 5. No fixation to chest wall or skin involvement.
 6. Proper radiotherapy facilities should be available.
 7. Proper follow up should be ensured.

Q. What is QUART technique?

A.

- QUART technique mean:
 1. QUadrentectomy +
 2. Axillary clearance +
 3. Radiotherapy

Q. What are the types and indications of radiotherapy?

A.

A. Type of Radiation:

- Deep X- ray (External beam).
- Ir^{192} wire implant (Interstitial Beam).

B. Indications:

1. Post-operative after conservative surgery to the remaining breast tissue by radical dose (5000 RAD).
2. Post-operative after radical mastectomy on the chest wall by adjuvant dose (1500 RAD) if:
 - a- High grade tumor or large tumor.
 - b- Heavy LN positive patients.
 - c- Medial tumors for possibility of internal mammary LN affection.
 - d- Extensive lymphovascular invasion.

Q. What is Mc writer technique?

A.

- Downstaging of the tumor from stage 3 to stage 2 by preoperative radiotherapy (not done now), downstaging by chemotherapy is done with little ↑ in survival.

Q. What is the adjuvant systemic therapy?

A.

- It is a systemic therapy given in adjunct to local therapy in operable cases of breast cancer

Q. Mention the types of adjuvant systemic therapy and its indications?

A.

1. Adjuvant chemotherapy → combination chemotherapy is given in premenopausal patients with positive axillary lymph nodes.
2. Anti-estrogen (Tamoxifen) → is given in postmenopausal patients.

Q. What is the commonest combination chemotherapy given in cancer breast?

A.

- The commonest combination is cyclophosphamide + methotrexate + 5-fluorouracil.

Q. What is the mechanism of action of tamoxifen?

A.

- Tamoxifen is anti-estrogen (agonist-antagonist) competes with estrogen at cellular hormone receptors making the tumor cease to proliferate.

Q. What is the rate of response to hormonal therapy?

A.

- ER +ve → 60 %
- ER+PR +ve → 100%
- 10 % of patient with receptors give no response because receptors are in the nuclei

N.B: LHRH agonist as oophorectomy
--

Q. What are the different lines of hormonal therapy done in stages III & IV?

A.

Hormone (endocrine) therapy includes

Pre-menopausal	Post-menopausal
1- <u>First line of treatment:</u> tamoxifen 20 mg/day. 2- <u>Second line of treatment:</u> - Bilateral oophorectomy by: a- Medical suppression (LHRH). b- Surgery c- Radiotherapy. - Adrenalectomy (rarely done) by : a- Surgery. b- Medical treatment by aminoglutathemide + cortisone.	<u>First line of treatment:</u> tamoxifen 20 mg/day. <u>Alternative hormonal agents:</u> 1- Aromatase inhibitors. 2- Raloxifene.

- The 2nd line of treatment is needed if the primary line of treatment was successful then the patient loses the response & does not do adrenalectomy except if she responded for oophorectomy & then lost response.

Q. What is the reconstructive surgery of the breast?

A.

- Timing (playing an important role in physical and emotional outcomes among survivals):
 - Iry (at the time mastectomy).
 - Delayed
- Techniques:
 - Myo-cutaneous flaps:
 - Latissimus dorsi.
 - Transverse rectus abdominis myocutaneous flap (TRAM)
 - Prosthesis & tissue expander.
 - (Silicon gel implant).
 - Skin sparing operation may be done to preserve nipple and areola may be done.
 - Better tattoo or skin flap from labia minora or medial side of the thigh (pigmented)

Q. What is the treatment of spread of breast cancer?

A.

Treatment of spread of cancer breast → treatment of complications (symptomatic treatment):

1. Hypercalcemia:
 - Correction of dehydration by IV fluids + frusimide
 - Prednisolone + biphosphonates
2. Pathological fractures:
 - Immobilization + internal fixation
 - Radiotherapy to the fracture site.

3. Cerebral metastasis: corticosteroids and radiotherapy
4. Spinal cord compression:
 - Surgical cord decompression with stabilization followed by radiotherapy
5. Superior vena cava obstruction: radiotherapy is the treatment of choice
6. Pleural effusion: systemic therapy and chest tube drainage
7. Liver metastasis: treated by chemotherapy.
8. Lymphedema: can be treated by complete decongestive therapy.

Q. Mention what you know about cancer breast in males?

- It's a rare disease. Firstly recognized by English surgeon JOHN Aderne in smith papyrus.
- Risk factors :
 - BRCA 2 2-3 % risk factors.
 - Prolonged heat exposure due to testicular atrophy
 - Previous chest wall irradiation as in ttt of previous malignancy
 - Conditions with relative hyperestrogenemia.
 - Testicular atrophy
 - Exogenous estrogen
 - Obesity
 - Liver disease
- C/P:
 - Painless lump beneath the Areola at 50 years.
 - Nipple discharge or retraction or ulceration.
- Spread:
 - Blood borne metastases are common.
 - Poor prognosis.
- DD: Gynecomastia & metastasis from other tumors.
- Treatment:
 - Lumpectomy is not done but modified radical mastectomy if detected early and if carcinoma in situ

Definition

Etiology

3. Pathological:

a- ↑ Estrogen:

- 1- Feminizing tumors of testis (Sertoli cell tumor).
- 2- Feminizing tumors of adrenals.
- 3- Paramalignant syndrome as bronchogenic carcinoma.

b- ↓ Testosterone:

- 1- Orchidectomy.
- 2- Testicular atrophy: mumps, leprosy and heat exposure.

c- ↓ Metabolism of estrogen, liver cell failure.

4. Iatrogenic:

- 1- Digitalis.
- 2- Aldactone.
- 3- Reserpine.
- 4- Cimetidine.
- 5- Estrogen therapy as in cancer prostate.

5. Genetic: Klinefelter syndrome.

Clinical Picture

- History of drug intake.
- Abdomen → hepato-splenomegaly
- Testis → atrophy

Investigations

1. Blood tests (including liver function tests and hormone studies)
2. Urine tests
3. Consultation with an endocrinologist - a physician who specializes in the functioning of hormones and how the hormones affect multiple organs.
4. Mammogram - a low-dose x-ray of the breast.

Treatment

A- If 2ry:

TTT of the cause.

B- If 1ry:

1. Subcutaneous mastectomy:

2. Suction lipectomy:

This is a form of liposuction that allows for tapering of the edges of the tissue without unwanted side effects.

3. Endoscopic surgery:

- This newer procedure uses a small, flexible tube with a light and a camera lens at the end (endoscope) to examine the inside of the breast.
- Tissue is then removed without placing a large, open, surgical incision.

- 7 -

LYMPHATIC SHEET

Lymphadenopathy Case Sheet

History

Personal H:

- Name
- Age
 - Young age → TB.
 - Adult → acute leukemia & Hodgkin.
 - Elderly → Secondaries, other lymphomata & chronic leukemia.
- Sex → Malignancy more in males.
- Marital status
- Address, Residence, Occupation
 - Area of bad hygienic condition → TB
 - Brucellosis in those with contact with animals.
- Special habits of medical importance
 - Alcohol → because alcohol induce pain in Hodgkin disease
- If ♀ → menstrual history

Complaint: + Duration بلفظ المريض إيه اللي جابك المستشفى

HPI: آخر مرة كنت سليم امتي

1. Pain

Site, Character, Radiation, What increase or decrease, Onset, Course, Duration, Severity, and what associates.

N.B: Alcohol induce pain in Hodgkin disease

2. Swelling

a) Site

b) Size → (lemon size, orange size ...)

c) Onset ابتداء ازاي

- Accidental -Acute -Gradual

d) Course:

- Progressive - Regressive.
- Stationary - Fluctuating

e) Duration: أول مرة لوحظ

- Short: (days or weeks).
- Long: (months or years).

f) Other swellings

g) Effect on the general condition:

- Symptoms of TB → (night sweat, night fever anorexia, loss of weight) & chest troubles
- 1ry septic or malignant focus in the draining area
- Cachexia in malignancy

h) Apparent cause.

i) What increase & what decrease it

3. Disturbance of function

1- Cervical

- Manifestation of infiltration of brachial plexus → Pain, paralysis or sensory loss in the UL
- في وجع في ايدك ؟ بتعرفي تحركى ايدك كويس
- Accessory n. → Stiffness of movements of neck
- في وجع في كتفك ؟ بتعرفي تحركى كتفك كويس
- RLN → hoarseness of voice.
- في تغير في الصوت
- Dyspnea, dysphagia, arm ischemia or edema

2- Mediastinal → Mediastinal syndrome (dyspnea, cough).

- في صعوبة في التنفس او كحة

3- Abdominal → Swelling, back pain, edema, dilated vs, ischemia of LL.

- If arterial obstruction → ischemia of LL
- If venous obstruction → edema ,D.V.T

4- Inguinal or axially → lymphedema, dilated vs, pain, ischemia.

- في كلاكيع او وجع في وركك

4. Other systems

- **Liver:** pain & swelling in Rt. Hypochondrium & jaundice.

- في وجع او كلاكيع في بطنك

- **Bone:** Bony pain, swelling or pathological fracture.

- في وجع في عظمك

- **Lung:** Chest pain, dyspnea, cough & haemoptysis.

- في كحة ودم

- **Effect on general condition:**

- **Inflammation:**

- **Fever**

1. Hectic fever: as in acute lymphadenitis
2. Night fever: as in T.B
3. Glandular fever: {fever+rash} as in I.M.N
4. Pel. Ebstein fever: (Brucellosis, lymphoma)

- **Cachexia**

5. History of investigations or medications

Past history

- Similar attacks.
- Common diseases: (**DM**, Hypertension, **TB**, **B**, Hepatitis, **DVT**)
- Drug allergy & intake
- Blood transfusion
- Previous Operations

Family history

- Similar condition in one of the members of the family.
- Consanguinity

Examination

General:

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

- اسطمية 3 {
 - Body built.
 - Decubitus
 - Facial expressions.
 - Complexion → **(3 colors)** Jaundice, pallor & cyanosis.
 - Jaundice → Hodgkin lymphoma (LNs in porta hepatis)
 - Pallor → anemia
 - Cyanosis → mediastinal LNs
- تانيين 3 {
 - Head
 - Eye : for jaundice (if LNs in porta hepatis)
 - Lip : for pallor and cyanosis (if LNs in mediastinum)
 - Tongue :paralysis (if infiltration of hypoglossal nerve)
 - Parotid region : for swelling **(Mikulicz)** autoimmune
 - Neck
 - Thyroid gland : for enlargement
 - engorged neck veins → mediastinal syndrome
 - Spine
 - For metastasis & tenderness (Brucellosis)
- حاجات 3 {
 - Chest & heart
 - sternum →tenderness as in Leukemia
 - (Despine`s sign → Bronchial breathing below level of T4 in mediastinal L.N. enlargement)
 - Abdomen.
 - Hepatosplenomegaly as in Leukemia
 - Testis: if testicular tumor.
 - PR or PV
 - Ascites
 - aortic & iliac LNs
 - Extremities
 - tender bone → lymphoma, leukemia
 - Pulse, blood pressure & temperature.
 - fever → Hodgkin lymphoma
 - unequality of the pulse if the L.N compress the vessels

Examine all accessible L.Ns. as examination of any swelling

Local: سلم على العيان و قف على يمينه

Inspection:

و تعلق على From 2 different planes

A. Swelling

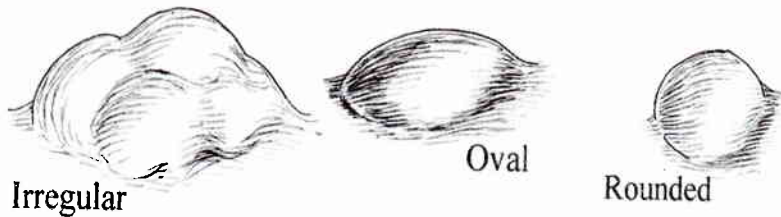
1. Site

- The anatomical region of the swelling
- T.B : upper deep cervical L.Ns
- Hodgkin : lower deep cervical L.Ns
- 2ry \$: epitrochlear LNs

2. Size

- In cm (best)

3. Shape



4. Number

- Single or multiple (localized or generalized)

N.B: if multiple describe the largest one

B. Skin overlying:

- Normal, Stretched, Pigmented,
- Show sign of inflammation (redness, edematous).
- Dilated veins, Ulcer, Scar, red lines of inflamed lymph vessels.....

C. Other Lymph nodes in the body

- If generalized Lymphadenopathy look for other LNs in the body
- If localized lymphadenopathy look for infection or malignant focus at draining area.

Palpation:

1. Warmth: حركة بظهر اليد

- Temp ↑ in inflammation

2. Tenderness: حركة ببطن اليد و عيني على وجه العيان

- Inflammatory → mostly tender
- Neoplastic → are not tender.

3. Edge: حركة بجانب اليد

- Ill-defined, Well-defined.

4. Surface: حركة براحة اليد

- Smooth, nodular.

5. Consistency: حركة باليدين

- Cystic → cold abscess.
- Solid → calcified 1ry T.B or non Hodgkin
- Soft → degenerated non Hodgkin
- Firm → acute lymphadenitis , 1ry T.B , 2ry T.B and lymphoma

6. Relation to each other (if multiple)

- Discrete (2ry T.B , early Hodgkin)
- Matted (1ry T.B) *fused but can be counted*
- Chain (T.B)
- Amalgmated (Non Hodgkin) *fused and can't be counted*

7. Relation to surrounding structures:

- See before in swelling sheet.....

8. Other swellings:

- If generalized Lymphadenopathy look for other LNs in the body
- If localized lymphadenopathy look for infection or malignant focus at draining area.
- In cervical Lymphadenopathy : examine :
 - 1) oral cavity (tongue , teeth , cheek , lips , tonsil)
 - 2) thyroid
 - 3) face
 - 4) scalp
 - 5) parotid
 - 6) pharynx & larynx
- In axillary lymphadenopathy : examine :
 - 1) Breast
 - 2) upper limbs
 - 3) Ant. Wall of trunk until level of umbilicus
 - 4) Post. Wall of trunk till level of umbilicus
- In supraclavicular lymphadenopathy: **Virchow's gland**
- Inguinal Lymphadenopathy :
 - 1) Lower limbs
 - 2) Genitalia
 - 3) Perineum
 - 4) Anal canal
 - 5) Gluteal region
 - 6) Ant. Abdominal wall below level of umbilicus

Percussion:

Sternum for:

- Mediastinal mass
- Tenderness as in leukemia

Auscultation:

- Despine's sign: bronchial breathing auscultated below level of T4 on back

Clinically Important Lymph Nodes:

Cervical lymph nodes

Circular chain

Inner circle

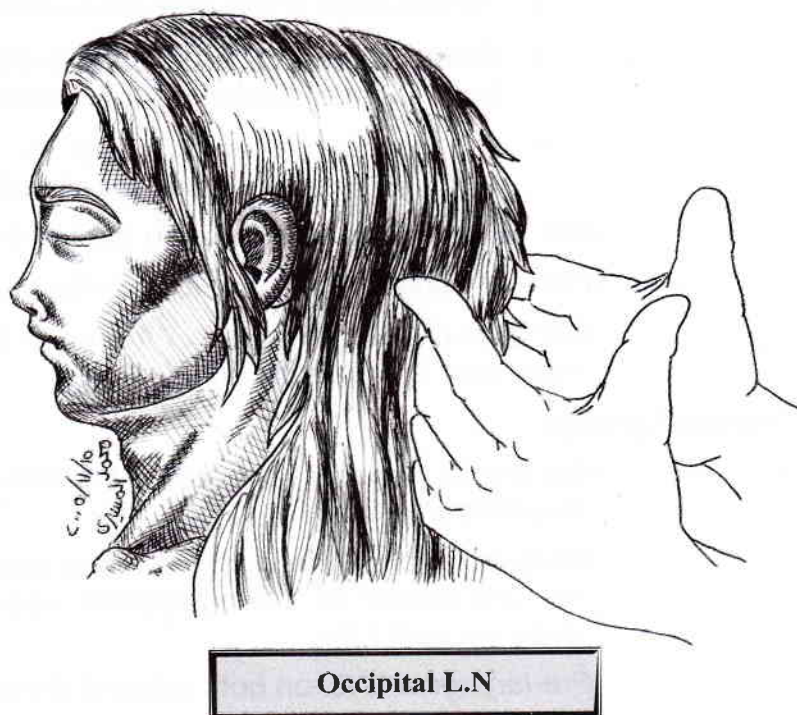
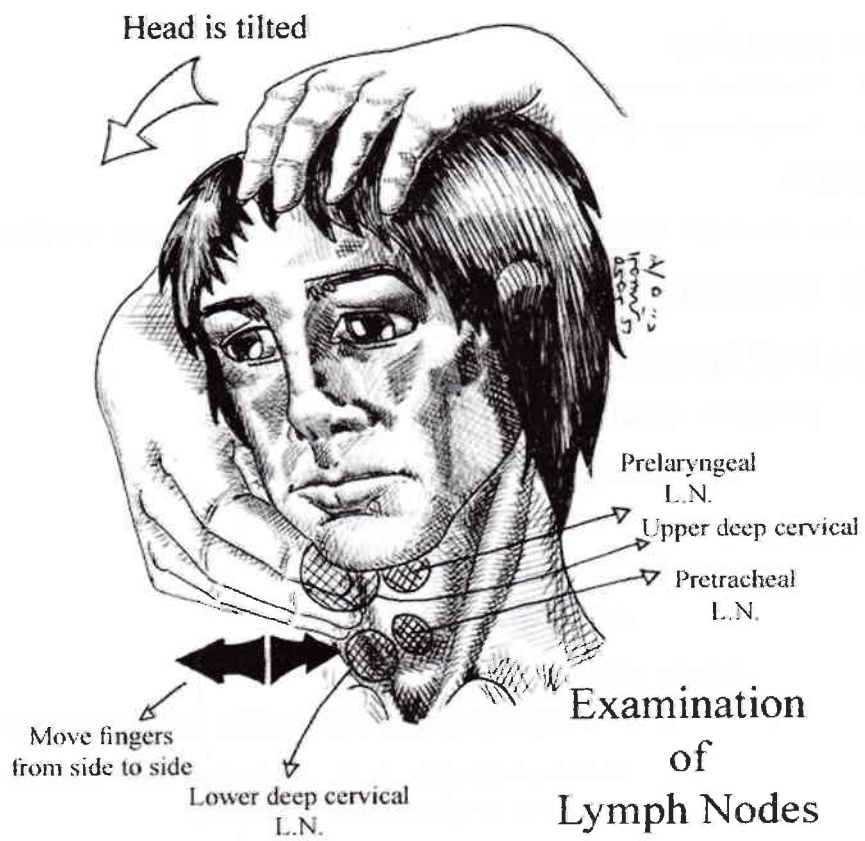
- *Two palatine tonsils.*
- *Lingual tonsil.*
- *Adenoid.*

Outer circle:

- *Submental LN: in the middle behind symphysis menti*
- *Submandibular L.N: midway bet- symphysis menti and the angle of the mandible.*
 - *Tilt the head to the side we examine it*
 - *Rolling of the L.N to differentiate it from submandibular salivary gland*
 - *L.N roll because it is sup to deep fascia but salivary gland is not rolling*
- *Pre auricular or parotid LNs: in front of the auricle.*
- *Post- auricular LNs: superficial to mastoid process.*
- *Occipital LNs: at the apex of the post- triangle of the neck over the occipital bone.*

Vertical group:

- *Superficial cervical LNs: along the ext- jugular vein. Superficial to Sternomastoid.*
- *Deep cervical LN: along the internal jugular vein from the ant border of Sternomastoid, upper and lower deep cervical LNs.*
- *Pre-laryngeal LNs: on both sides of thyroid cartilage.*
- *Pre-tracheal LNs: in front of trachea in the suprasternal notch.*





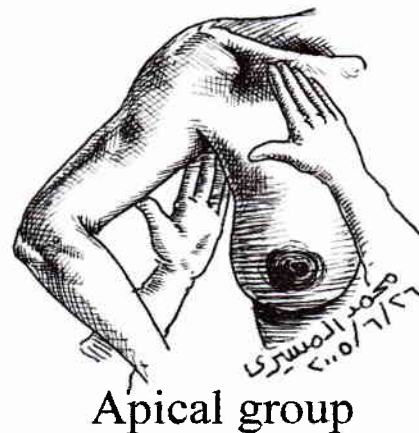
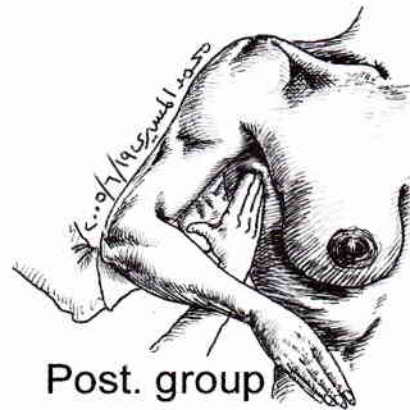
Submandibular L.N



Submental L.N

Axillary L.Ns:

- Include 5 groups:
 - **Central or medial group:** along the base of the axilla.
 - **Pectoral or anterior group:** deep to the pectoralis major muscle.
 - **Apical group:** in the apex of the axilla.
 - **Lateral or humeral group:** along the upper part of the humerus.
 - **Posterior or subscapular group:** along the subscapularis muscle.



Inguinal LNs

Superficial inguinal LN

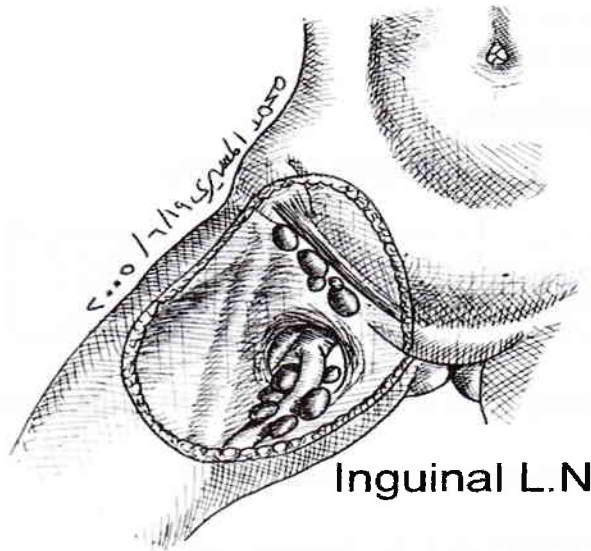
Horizontal group → Below & parallel to the inguinal lig

Vertical group

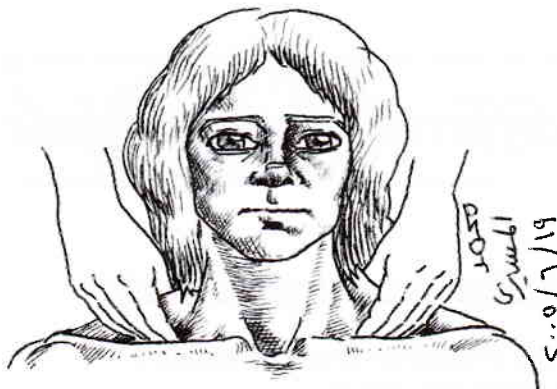
- Along the saphenous vein.
- The only glands in the body which may be normally palpable.especially in bare footed person

Deep inguinal LN s (Clouquet)

- Deep to the fascia lata & on the inner aspect of the femoral vein.



Inguinal L.N



supraclavicular LN

N.B. Catchment area

- 1 .**Cervical LNs** → head & neck
- 2 .**Left supraclavicular LN** → All body except Rt breast, Rt UL, Rt half of head
- 3 .**Axillary LNs** → UL + breast
- 4 .**Inguinal LNs** → from umbilicus till toes

Special Investigations

Laboratory Investigations:

CBC, & differential leucocytic count, blood sugar, blood urea.
Tuberculin test

Radiological Investigations:

Plain & contrast X- ray.
CT scan, & spiral CT

Invasive Investigations:

- Biopsy - Staging laparotomy .

Provisional Diagnosis

Anatomical → It is diagnosis of the region which is affected.

Pathological → inflammatory, neoplasticetc.

Associated condition → T.B., Ascites....etc.

D.D. of different Lymph Node Diseases

Generalized

A. Start as one group then become generalized :

1. 2ry T.B
2. lymphomas (Hodgkin & non Hodgkin)

B. start generalized from the start

3. leukemia
4. 2ry syphilis
5. Infectious mononucleosis
6. AIDS

Localized

1. Acute septic lymphadenitis
2. Chronic lymphadenitis
3. TB lymphadenitis (caseous)
4. \$ (first stage).

	<u>Symptoms and signs</u>	<u>Local examination</u>	<u>Investigations</u>
<u>Draining area</u> "Secondary L.N. disease".	+ ve symptoms or signs in the draining area.	Search for 1ry focus anywhere draining that L.N	Search for occult focus. Before diagnosing 1ry lymph node dis.
<u>Syphilis</u>	Skin Rashes and condylomata lata	Small size (few mm) generalized. Firm and discrete	W.R.
<u>Tuberculosis</u>	T.B. toxemia and chest troubles	Matted, localized 1st firm, then soft (cold abscess, then T.B. sinus).	* Biopsy "T.B. giant cells." * Tuberculin (good -ve). * Chest x-ray.
<u>Hodgkins disease</u>	Pel-Epstein fever, pruritis, pain on drinking alcohol.	Variable in size Localized, then generalized, firm, and discrete.	Biopsy (Doorthy reed giant cells).
<u>Leukemia</u>	Bleeding tendency and bone ache, anemia.	Large or Moderate size L.N., Firm, discrete generalized.	*Blood picture. * Bone marrow puncture.
<u>Lympho-sarcoma</u>	*Rapidly progressive course. * Infiltrative	Amalgamated L.N. (Fixed to all surrounding).	Biopsy.
<u>Reticulum cell sarcoma.</u>	Rapidly become generalize in randomized way of dissemination.	Multiple, firm, discrete mobile, early localized then generalized.	Biopsy.

5. Metastasis.
6. Early lymphomas
7. Lymphogranuloma inguinale
8. Filarial lymphadenitis

Lymphadenopathy

Case I. Cervical Lymphadenopathy

Q. What is your diagnosis?

A.

- A swelling at the side of the neck, most probably a lymph node swelling

Q. How do you reach this diagnosis?

A.

- Because the swelling has the following characters:
 - It is the commonest swelling of the neck
 - The swelling lies in the anatomical site of a lymph node group
 - The swelling is actually composed of multiple swellings
 - The surface of the swelling is nodular
 - The swelling lies deep to the sternomastoid muscle

Q. Is it a case of localized or generalized lymphadenopathy?

A.

- It is a localized lymphadenopathy case, since examination of other lymph nodes of the body is free.

Q. What are the causes of localized lymphadenopathy in the neck?

A.

1. Non specific cervical inflammatory lymphadenopathy
2. T.B. lymphadenitis (fibrocaseous type)
3. Metastases
4. Early lymphomas

Q. What is the cause of cervical lymphadenopathy in this patient?

	T.B Lymphadenopathy	Hodgkin's Lymphoma	Non-Hodgkin's Lymphoma	Secondary Metastases
Age	Child/young adult	Young adult	Adult or elderly	Adult/ elderly
Site in the neck	Usually upper cervical L.Ns	Usually lower cervical L.Ns	Upper or lower cervical L.Ns	Upper or lower Cervical L.Ns.
Consistency	Soft, cystic or hard	rubbery	Soft, firm or Hard	Stony hard
Relation to each Other	Matted may be rosary beads	Discrete (except very late)	Amalgamated	early discrete and late Amalgamated
Relation to surroundings	May be fixed	Mobile (except very late.)	Fixed	Early mobile and late fixed
Other features	T. B Toxemia	Node in the center is bigger than surrounding	May be skin ulceration	Catchment area usually reveals a <u>lry tumor</u>

Case 1: **TB lymphadenopathy**

Q. What are the types of T.B. lymphadenitis?

A.

- There are two types
- 1. **Fibrocaceous T.B. lymphadenitis** (Localized type) it is lymph borne
 - In the fibrocaceous type, infection is lymph borne, reaching the nodes through the afferent lymphatics, and so, the first part to suffer is the cortex of the node
 - Examples include:
 - Upper cervical L.Ns. from the tonsils
 - Lower cervical L.Ns. from upper cervical L.Ns.
 - Mediastinal L.Ns.: from T.B. of the lung
 - Mesenteric L.Ns. (tabes mesenterica) : from intestinal T.B.
- 2. **Lymphadenoid T.B. lymphadenitis** (generalized type) it is blood borne.
 - On the other hand, in the lymphadenoid type, it is blood borne, reaching the nodes through the blood vessels, and so, the first part to suffer is the medulla of the node.
 - In lymphadenoid T.B., there is no periadenitis, no matting, no caseation, no cold abscess, no calcification, no sinuses, no beading in the lymph vessels.

Q. Describe the microscopic picture of a T.B. lymphadenitis

A.

1. Central zone of eosinophilic structureless necrosis containing T.B. bacilli
2. Midzone of epithelioid cells and Langhans giant cell Peripheral zone of small round cells

Q. How do you treat fibrocaceous T.B. lymphadenitis?

A.

1. **General treatment:**
 - SANATORIAL TTT + Anti-T.B. drugs (rifampicin 600 mg + I.N.H. 300 mg daily)
2. **Local treatment**
 - Excision: For localized single group persisting after 6 month of medical treatment
 - Cold abscess:
 - It is called a cold abscess because
 - It does not show the cardinal signs of inflammation; hotness, tenderness & redness
 - It is treated by repeated aspiration not drained because its drainage predisposes to a T.B. sinus.
 - Certain precautions are taken to avoid a T.B. sinus formation;

- In a healthy skin away from the abscess
- Under complete aseptic precautions
- In a non dependent site
- With a wide bore needle
- In a valvular manner
- Aspiration is stopped when there is blood in the aspirate & reaspirate when it refills from residual lymph node tissue not caseated.
- 2ry infected cold abscess: Drainage
- T.B. sinus: Repeated dressing with streptomycin powder

Q. What are the abscesses that are aspirated and not drained?

- A.
- Amoebic liver abscess (for fear of amoeba cutis)
 - Brain abscess (for fear of introducing infection to the brain and CSF leak)
 - Cold abscess (for fear of T.B. sinus)

Browse's introduction to the symptoms & signs of surgical disease/ Ch11 the neck P272

Case 2: **lymphoma**

Q. Mention the staging of lymphoma?

- A.
- Hodgkin's lymphoma:**
1. **Stage 1:** Localized to one group of lymph nodes
 2. **Stage 2:** Limited to more than one group of L.Ns. on the same side of the diaphragm
 3. **Stage 3:** The disease is present on both sides of the diaphragm, but the involvement is limited to L.Ns. spleen and Waldyer's ring
 4. **Stage 4:** Involvement of bone marrow, lung, liver, GIT, skin and any organ other than L.N., spleen or Waldyer's ring

Each stage is further subdivided into "A" or "B" according to absence or presence of associated systemic symptoms (Fever, Sweating, Weight loss, Pruritis, Anemia, Bone pain)

Non Hodgkin lymphoma:

Lukes & Collins Classification

It is based on the cells of origin, thus non Hodgkin's lymphoma is divided as

1. Cell type (Thymus derived: T-cell).
2. Cell type (bone marrow derived: B-cell) .
3. Cell type (Unclassifiable).

Q. Comment on Pel Ebstein fever?

A.

- It is a periodic fever (2 weeks on and 2 weeks off). It was originally described as a feature of Hodgkin's lymphoma, but this is a mistake. It is a character of Brucellosis. Fever in Hodgkin's lymphoma is an irregular fever.

Q. What is the macroscopic picture of lymphoma in a given lymph node?

A.

- If node is bisected, there is loss of its normal architecture (there is no cortex and medulla)

Q. What are characters of staging laparotomy?

A.

It is not done nowadays because the accuracy of spiral CT.

- Meticulous inspection and palpation of abdominal organs
- Biopsy from both lobes of the liver
- Splenectomy
- Node biopsy: Para-aortic, coeliac, mesenteric, and ileal L.Ns.
- Open biopsy from the iliac crest
- In females, medial retro-uterine fixation of the ovaries

Q. What investigations do you ask for in a case of lymphadenopathy?

A.

1. Laboratory investigations:

a) Blood picture

- Hodgkin's lymphoma: Anemia, lymphopenia
- Septic lymphadenitis :eosinophilia in Leucocytosis
- Leukemias :Marked leucocytosis in
- T.B. :Leukopenia with relative lymphocytosis

b) Serological tests

- Glandular fever: Paul Bunnell test for WR test and for
- Syphilis: VDRL

2. Radiological investigations

- Chest X ray (for metastases, lymphomas)
- Ultrasonography & CT (liver, spleen and par aortic L.Ns.)
- Lymphangiography (for lymphomas and 2ry L.Ns.)

3. Other investigations

- Bone marrow aspiration: It may show infiltration in leukaemia or lymphomas. It is only positive if the bone is infiltrated.

- L.N. biopsy: we can find **Reed Sternberg** cell. It is a giant, multinucleated, containing 2-8 nuclei arranged in a mirror image in the center of the cell with prominent nucleoli.
- Aspiration of cold abscess → bacteriological study for T.B.
- Staging laparotomy: in Hodgkin's lymphoma

Q. How do you treat Hodgkin's lymphoma?

A.

- Stage I,II ----- > Radiotherapy
 - **Supradiaphragmatic disease** -- > Mantle irradiation (cervical + axillary + mediastinal nodes)
 - **Infradiaphragmatic disease** -- > Inverted Y field irradiation (Para-aortic + pelvic + inguinal ± splenic axis)
- Other stages ----- > Combination chemotherapy
 - MOPP (Mustine + Oncovin + Procarbazine + Prednisone)

Q. What is the clinical picture of non Hodgkin lymphoma?

A.

- Affect usually elder males > 60 years + rapid progressive course
- LNs start in upper deep cervical LN, painless, soft, firm or hard amalgamated, first mobile, later on fixed to deeper and superficial structures & may ulcerate through skin
- In late cases many LN groups are affected together with spleen, liver, bone marrow, GIT mucosa, skin (mycosis fungoides)

Q. Describe microscopic picture of Non Hodgkin lymphoma?

A.

- The normal nodular architecture is completely lost and replaced with malignant cells of different shapes & different degree of differentiation with central hemorrhage & necrosis.

Q. What is the treatment of non Hodgkin lymphoma?

A.

(Mainly by chemotherapy as it is multicentric)

- Chemotherapy: C.V.P. (cyclophosphamide, vincristine, prednisolone) +/- adjuvant radiotherapy
- No role of surgery apart from LN biopsy or gastric and intestinal resection in GIT lymphomas

Q. Is the prognosis good?

A.

- No it has a bad prognosis due to high grade malignancy and the usual old age with bad general condition.

Q. What is Burkitt's lymphoma?

A.

- Is a highly malignant B cell tumor that may involve sites other than LNs & R.E.S.
- There is strong evidence that it may be due to EBV & may be related to malaria.
- It is common between ages 2- 14 years.
- Commonly multifocal, affect the jaw (50%), ovaries, retroperitoneal tissues & CNS
- Histopathology: Dark blue lymphocytes & starry shaped faint histocytes (*Starry sky appearance*).
- Treatment: *By combination chemotherapy & tumor debulking if possible*

Q. What is the differential diagnosis of lymphadenopathy with enlarged spleen?

A.

1. Leukemia,
2. Lymphomas
3. Glandular fever, TB, Brucellosis
4. Coincidence of splenomegaly with chronic non-specific lymphadenitis

Q. How do lymph nodes differ between leukemia and lymphoma?

A.

- In leukemias, the different groups are equal in size; in lymphomas they are unequal.

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Other Oral Qs

Q. Can you find metastatic lymph nodes in the neck without a clinically detected primary in the catchment area?

A.

- Yes, in case of silent areas which include:
 1. Nasopharynx
 2. Pyriform area of the larynx
 3. Postcricoid area of the larynx
 4. Papillary carcinoma of the thyroid gland (lateral aberrant thyroid)

. Q. Comment on matted and amalgamated lymph nodes?

A.

- In both conditions the lymph nodes are adherent to each other. The difference is that matted lymph nodes are countable ;Matted lymph nodes is a character of fibrocaceous T.B. lymphadenitis, and it is due to periadenitis causing fibrous adhesions between the lymph nodes, so they are countable.
- While; amalgamated lymph nodes are not. Amalgamated lymph nodes are a character of malignant lymph nodes, and it is due to infiltration of malignancy between the lymph nodes, so they are not countable.

Q. plan for examination for the source of 2ndry cervical lymphadenopathy?

A.

- 1- Examine the skin of the scalp, face, ear, neck.
- 2-look in the nose
- 3-look in the mouth at tongue, gums, mucosa & tonsils
- 4-palpate the parotid, submandibular & thyroid gland
- 5-examine the arms & chest wall including the breast
- 6-examine the abdomen & genitalia

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Q. DD f swelling in the neck? (deep to the deep fascia)

A.

✓ Multiple lumps are mostly lymph nodes

✓ A single lump

➤ **In the ant. triangle that doesn't move with swallowing**

▪ **Solid:**

- A lymph gland.
- Carotid body tumor .

▪ **Cystic**

- Cold abscess.
- Branchial cyst.

➤ **In the posterior triangle that doesn't move with swallowing**

▪ **Solid**

- A lymph gland

▪ **Cystic**

- Cystic hygroma.
- pharyngeal pouch.
- Occasionally a secondary deposit of a papillary thyroid carcinoma.

▪ **Pulsatile:**

- Subclavian aneurysm

➤ **In the ant triangle that moves with swallowing**

▪ **Solid:**

- Thyroid gland
- Pretracheal LN (Delphian LN)

▪ **Cystic**

- Thyroglossal cyst

Browse's introduction to the symptoms & signs of surgical disease/ Ch11 the neck P287

Case 2: Lymphoedema

Q. What is lymphoedema?

A.

Chronic edema from chronic lymphatic obstruction

Q. What is its site?

A.

Subcutaneous tissue of the limbs, breast, scrotum, vulva.

Q. What cause lymphoedema?

A.

A. Congenital :

According to age

1. Lymphoedema congenita = at birth. (usually aplasia)
2. Lymphoedema precox = at puberty. (usually hypoplasia)
3. Lymphoedema tarda = in adult.

According to finding in development of lymph vs

I- Hypoplasia

In which the number of lymph vessels is reduced in the affected limb.

Example in the thigh there are one or two vessels instead of the usual five or more.

II- Aplasia → No lymph vessels are demonstrated.

III- Varicose lymphatics → destroyed valve

The condition is often associated with incompetent valves.

B. Acquired lymphoedema :

- It may be due to:
 1. Repeated attacks of streptococcal lymphangitis (i.e. cellulitis).
 2. Filariasis (commonest cause).
 3. Irradiation.
 4. Surgical excision of LNs which drain the limb (as after radical mastectomy).
 5. Obstruction of the lymphatic by malignant tumor

Q. What is the pathology of lymphoedema?

A.

- Lymphoedema of any cause → lymph stasis in superficial lymphatics only.
- This predisposes to recurrent streptococcal lymphangitis → each attack obliterates more lymphatic → so limb edema increases progressively.
- Pathology passes with 4 stages:
 1. Stage of soft pitting edema : early
 2. Stage of lymphorrhea: due to rupture of lymphatic vessels discharging lymph fluid with its high protein content in its subcutaneous tissue.
 3. Stage of fibrosis: (non pitting edema) the increased protein content excites fibrosis of S.C tissue (never affect tissue deep to the deep fascia)
 4. Stage of watery pseudopapillomatous formation: (elephantiasis) the skin is rough, thickened like elephant skin from severe S.C fibrosis → skin pigmentation and fibrosis.

Q. Describe filarial lesions?

A.

- It includes:
 1. **Leg**: lymphoedema and elephantiasis
 2. **Scrotum & vulva** : lymphoedema and elephantiasis
 3. **Spermatic cord**:
 - Funiculo-epididymitis (acute and chronic)
 - Lymphocele of spermatic cord
 - Diffuse hydrocele of spermatic cord
 4. **Tunica vaginalis** : secondary hydrocele

Q. Describe the clinical picture of lymphedema?

A.

- He may be a resident in filarial districts (Mansoura , Sharkjya)
- Elephantoid fever.
- Progressive leg swelling with a crease found at the ankle due to absence of edema because skin over the joint drains directly onto the joint lymphatics and not S.C lymphatics , skin over the dorsum of the foot can not be pinched due to fibrosis(Stemmer's sign).
- It is classified clinically by Bruner classification as follows:

Grade	Clinical features
Latent	Excess interstitial fluid and histological abnormalities of lymphatic but no clinical lymphedema .
1	Oedema pits on pressure and swelling disappear on elevation and bed rest
2	Oedema does not pit on pressure and not reduced on elevation
3	Oedema is associated with irreversible skin changes , fibrosis, papillae (elephantiasis)

Q. What are the complications of lymphoedema?

A.

1. Recurrent cellulites and lymphangitis
2. Blebs which become infected →pustules.
3. Lymphoedema ulcer from rupture infected bleb.
4. Huge disabling limb interfering with activity.
5. Lymphangiosarcoma(very rare).

Q. How do you investigate the case?

A.

- **Lymphangiography:**
 - Blue dye is injected in the 1st web space of the foot to color the lymphatic vessel on the dorsum of the foot →then lymphatic vessels is canulated and injecting ultrafluid lipidol in lymphatics on the dorsum of the foot
 - It shows state of lymphatic vessels in lymphoedema and asses extent of LN affection in tumors
- **For filariasis:**
 - Night blood film
 - LN biopsy
- **Lymphocintigraphy scanning of lymphatics and nodes using TC99**
- **CT scan** →exclude pelvic or abdominal mass
- **MRI** →provide clear image of lymphatic channels and LNs

Q. What is the treatment of lymphoedema?

A.

- Treatment is mainly conservative.

Palliative

Indicated in early cases

- | | |
|---|---|
| 1- Rest & elevation of the affected limb. | 2- Pressure bandage. |
| 3- Intermittent limb compression pump. | 4- Diuretics. |
| 5- Antibiotics for infection | 6- Treatment of the cause (filariasis). |

Surgery

The only indication is disability as results of surgery are not promising

- | | |
|--------------------------|------------------------------|
| 1. Knodoleon's operation | 2. Swiss-roll cake operation |
| 2. Amputation | |

Browse's introduction to the symptoms & signs of surgical disease/ Ch 7 lymphatics/ P211

- 8 -

ISCHEMIA SHEET

Ischemia Case Sheet

History

Personal H:

Name, Age, Sex, Marital status, special habits of medical importance, Address, Residence, & Occupation (long stay of foot in dampness → Trench foot), if ♀ → menstrual history

- **Age** → Child → Congenital \$ or arterial embolism
→ Middle age → Burger's, Raynaud's, & D.M. are common.
→ Old age → Atherosclerosis is the commonest.
- **Sex** → Berger's disease → Occurs only in males.
→ Raynaud's disease → Occurs only in females.
- **Marital status** → Impotence with Leriche syndrome
- **Occupation** → Raynaud's phenomenon → high frequency vibration
- **Special habits:** → Smoking → Essential feature in Buerger's disease → Ask about duration & number of cigarettes per day.
→ Accidental injection of maxtonfort intrabrachial → spasm & gangrene in the hand.

Complaint: ؟ بلفظ المريض إيه اللي جابك المستشفى + Duration

HPI: ؟ آخر مرة كنت سليم امتي

1. Pain:

▪ **Claudication pain:**

- | | |
|---------------------------|-------------------------|
| 1. Site. | 6. Course. |
| 2. Claudication distance. | 7. Duration. |
| 3. Radiation. | 8. Time & time of rest. |
| 4. What ↑ or ↓. | 9. Severity. |
| 5. Onset. | 10. What associates |

▪ **Rest pain:**

- | | |
|---------------|--------------------|
| 1. Site. | 5. Course. |
| 2. Radiation. | 6. Severity. |
| 3. Onset. | 7. What ↑ or ↓. |
| 4. Duration. | 8. what associated |

▪ **Sudden pain of acute ischaemia:**

- Site → at the point of occlusion then shoots distally.

2. Swelling:

- Localized swelling as Arterio-venous fistula
- Tumor or aneurysm.

1. Site.
2. Onset.

3. Course.
4. Duration.
5. Effect on general condition.
6. Size.
7. Other swellings.
8. What ↑ or ↓.
9. Apparent cause.

3. Disturbance of function من بره لجوه:

Skin:

- *Trophic changes* → thin, atrophic, stretched, dry, scaly, Loss of hair. & non-healing of ulcers. ؟ جلدك رفع ؟ شعر رجلك وقع ؟
- *Color changes* → لون جلدك اتغير ؟ Relation to posture, emotions & cold weather & course (continuous or intermittent)
(pale → bluish → blackish).
- *Sense of coldness.*

Nails: → Loss of luster, fissured & brittle. ؟ أظفارك بتقع ؟

Subcutaneous tissues → ↓ limb circumference & thin tapering toes.

Nerves:

- Sensory changes → Paraesthesia, Hypo or hyperesthesia

لما تقف على الأرض بتحس الرجلين زى بعض ؟

Muscles: → Motor changes:

- Weakness (in chronic ischemia)
و انت ماشى بتركز على أى رجل أكثر و اللا الاثنين زى بعض ؟
- Paralysis (in acute ischemia & Gangrene).

Gangrene: → If present, ask about the site, duration, & relation to trauma. صباغك اسود

Veins:

- History of migrating superficial thrombophlebitis حاجات زرقاء
بتيجى و تروح
- History of DVT رجلك وجعتك و دخلت المستشفى و ادوك هيبارين

Bones: sawing pain ؟ بتحس بنشر فى عظامك ؟

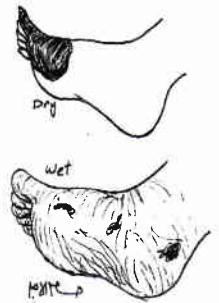
Joints: وجع فى مفاصلك ؟

Brain: Transient ischemic attacks (T.I.As) e.g. Hemiplegia, blindness, fainting.

4. Other systems:

Ask about manifestations of ischemia in other parts of the body.

- **Genital Impotence** → Leriche syndrome.
- **Heart** → HF, angina pectoris, & rheumatic heart.
- **Brain** → Loss of memory. Fainting, blindness or hemiparasis.
- **Eye** → Flashes of light.
- **Lungs** → Chest pain cough & haemoptysis.



- **Kidney** → Pain & haematuria.
- **GIT** → Cramping pain in the abdomen in relation to meals (post-cibal angina)

5. History of investigations or medications:

Past history:

- Similar conditions or recurrence.
- Common diseases: (**DM**, Hypertension, **TB**, **B**, Hepatitis, **DVT**).
- Drug allergy & intake.
- Blood transfusion.
- History of trauma (A-V fistula).

Family history:

- Similar condition in one of the members of the family.
- Consanguinity.

Examination

General :

- Body built.
- Decubitus.
- Facial expressions.
- Complexion → (**3 colors**) Jaundice, pallor & cyanosis.
- Head, Spine → 3 تانين
- Neck → congested neck veins (H.F), cervical rib.
- Chest & heart.
(A-V fistula → HF)
Complete cardiac examination
- Abdomen.
For aneurysm, auscultation over the major vessels, renal mass
- Extremities.
- Pulse, blood pressure, & temperature.
Palpate all accessible pulses: (rate, rhythm, volume & equality on both sides, condition of the arterial wall & thrill)
Bl. Pr. → In U.Ls in both sides

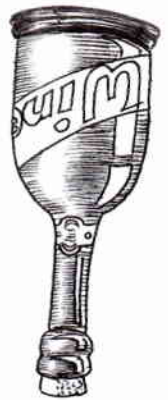
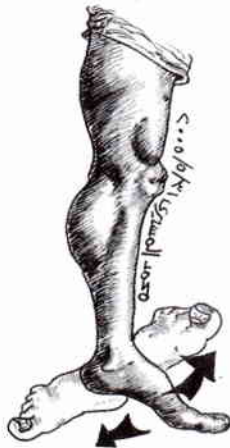
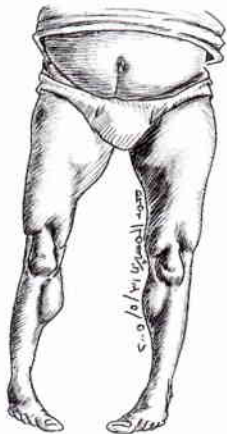
اسطمة 3

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

حاجات 3

Local: سلم على العيان و قف على يمينه

Exposure: → from Umbilicus downward



Inverted Champagne bottle

1. Both L.L are not symmetrical.
2. There is localized swelling in femoral triangle or popliteal fossa (aneurysm)
 - Comment on Site, Size, Shape, Number.
3. Overlying skin:
 - ☞ **Color changes:**
 - Pallor - cyanosis - mottling – green, brown or black.
 - ☞ **Trophic changes:**
 - Skin is dry, thin, shiny with loss of hair & trophic ulcer.

Gangrene

- Site.
- Extent.
- Characters.
- Type (moist or dry septic or aseptic)
- Line of demarcation & separation.

Characters of ischemic ulcers:

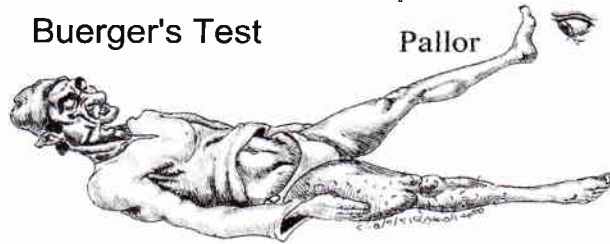
- 1- **Number:** single or multiple.
- 2- **Site:** dorsum of foot or digits.
- 3- **Size:** variable.
- 4- **Shape:** variable.
- 5- **Edge:** punched out.
- 6- **Margin:** Black.
- 7- **Floor:** Granulation tissue.
- 8- **Base:** Mobile.

N.B. → Fungal infection between the toes (Buerger's disease)

نسمع الجلد وبعدين هننسى صفحتين
(Color change + Temperature)

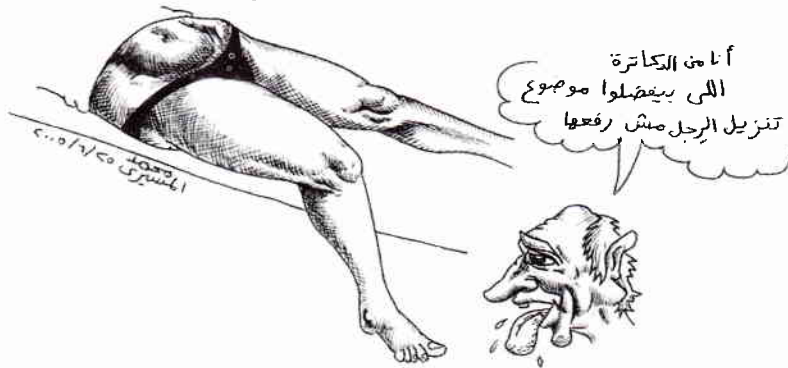
1- **Color change** → notice effect of position (elevation & dependency i.e. Buerger's Test & dependency test)

Buerger's test → Patient lies on back, raising the affected limb → pallor.



Dependency test

→ The patient lies on back, drops the affected limb below the level of bed → cyanotic and congested.

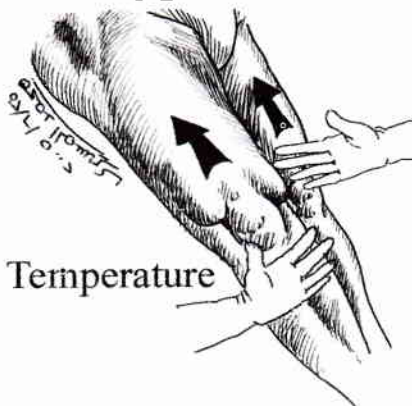


2- Skin Temperature→

In both limbs from below (after exposure for 5 minutes), determine the site of change of temp. (Level of ischaemia).

Level comparison

نسحب أيدينا على رجله



مقص مقفول
نفتحه و نقفله

مقص



Muscles:

Examine muscle tone, muscle state, passive movement, and motor power.

Power and active movements

- power (weak distally)

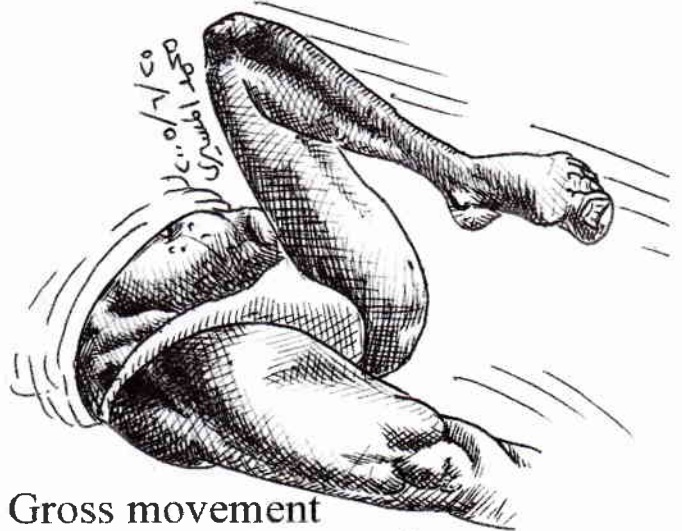
Power



- Movement (fine يفرّد و يثنى رجليه gross), (يحرك صوابه)
- Aortic block → limitation of hip movements.
- Femoral block → limitation of movements of the knee.
- Popliteal block → limitation of movements of the ankle.



Fine movement



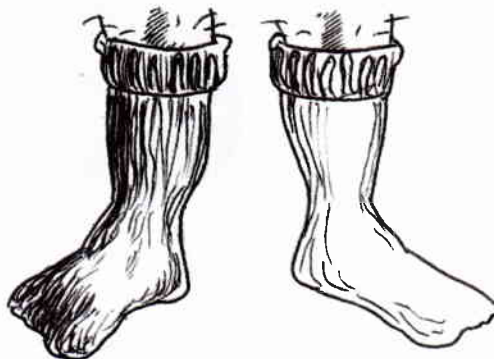
Gross movement

Muscle wasting → Vastus medialis 1st ms. to be affected in Leriche \$

Nerve: → Examine the sensation all over both limbs (pin prick)...



Unequality in sensation



Veins:

- Palpate veins for superficial thrombophlebitis (Burger's disease).
- DVT.

Arteries:

- Palpate arterial pulsations in both L.Ls.
- If in doubt, simultaneously feel your pulse & Compare with the patient's pulse).
- Both sides should be compared.
- At each side, note the force of Pulsations, the vessel wall, or presence of thrill.
- Different arteries & their sites for feeling pulse → see below.

Examine any ulcer, swellings, or edema

Special test:

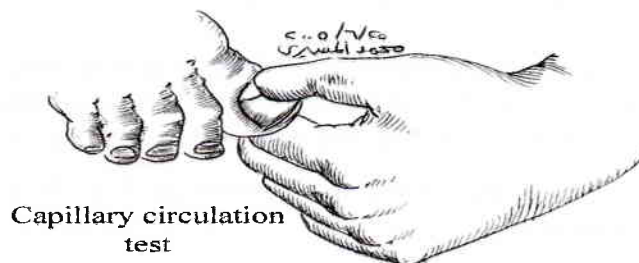
■ Harvey's venous refilling time:

- Elevate the limb to empty the vein and then place it down flat on the bed & estimate the venous filling time:
 - Normally: 5 - 10 seconds
 - Prolonged : in ischemia

N.B. Some prefer to lower the limb below the level of the bed

■ Capillary circulation test:

- Note the effect of pressure on the nail bed skin.
- Normally Pressure causes blanching.
- Release of pr. is followed by Immediate return of normal color
- Slow return of color indicates a sluggish capillary circulation and failure of blanching → the part is gangrenou



■ Addison's test:

- Done in case of upper limb ischemia.
- The shoulders are placed backwards.
- The patients take a deep breath with the arm pulled downwards and the chin turn upwards and to the affected side.
(Some prefer to tilt the head to the opposite side).
- The radial pulse may be weakened or obliterated in case of cervical rib or scalene syndrome.

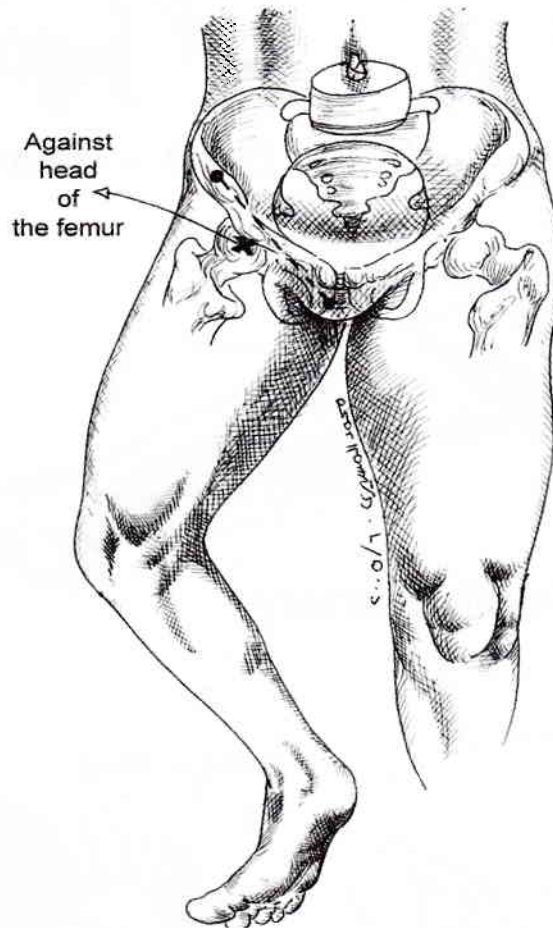


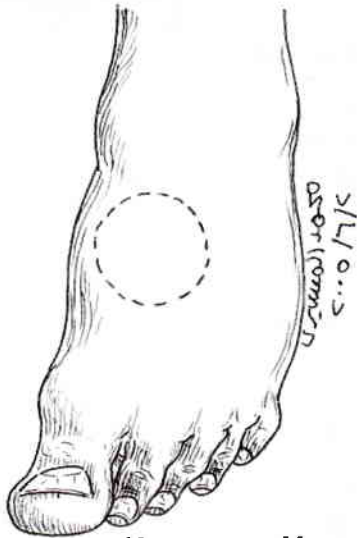
Arterial pulsations:

Artery	Site	Felt against
Dorsalis pedis	Lateral to tendon of extensor hallucis logus.	Navicular bone
Posterior tibial	Midway bet post border of med malleolus and med border of tendo-achillis esp. when the foot is dorsi-flexed and inverted or felt midway bet. The med malleolus & med tubercle of calcaneus).	med malleolus or calcaneus
Peroneal	1 cm med to lat malleolus	
Lower part of popliteal	The patient lying on the back, flex the knee at Right angle, the 2 thumbs on tibial tubrosity, put all fingers in the middle of lower part of popliteal Fossa.	upper part of tibia
Upper part of popliteal	Place the patient on his face with the knee flexed Feel pulse in the upper part of popliteal fossa.	lower part of femur
Femoral	Put thigh in flex with abd & ext rotation a point just below inguinal lig midway bet ASIS & symphysis pubis.	Head of femur
Superficial femoral	Along upper 2/3 of a line bet mid inguinal point & The adductor tubercle (between muscles of front medial aspect of thigh)	shaft of femur
Abdominal aorta	Along a line from xiphoid process to 1 cm below & to the Lt. side of umbilicus.	body of lumbar vertebrae
Common & Ext Iliac A	Along a line between end of aorta & mid inguinal point (Upper 1/3 of line represent common iliac a & lower 2/3 of this line represent ext- iliac a)	Sup. pubic ramus
Axillary	Put 2 thumbs on the deltoid muscle & all fingers feel pulse	upper part of humerus
Upper part of brachial	Just post to Biceps in the groove bet Biceps & triceps m	middle 1/3 of humerus
Lower part of brachial	In the cubital fossa (just med. to biceps Tendon)	Lower 1/3 of humerus
Radial		lower part of radius
Ulnar	Between Tendons of flexor carpi ulnaris & flexor digit. Superficalis	lower part of ulna

Artery	Site	Felt against
Subclavian	Its 3rd part is felt in supraclavicular fossa above the middle 1/3 of clavicle	
Common & Ext. carotid	Along the ant. Border of Sternomastoid m. (above & below upper border of thyroid cartilage).	
Superficial temporal	In front of tragus	

Femoral artery





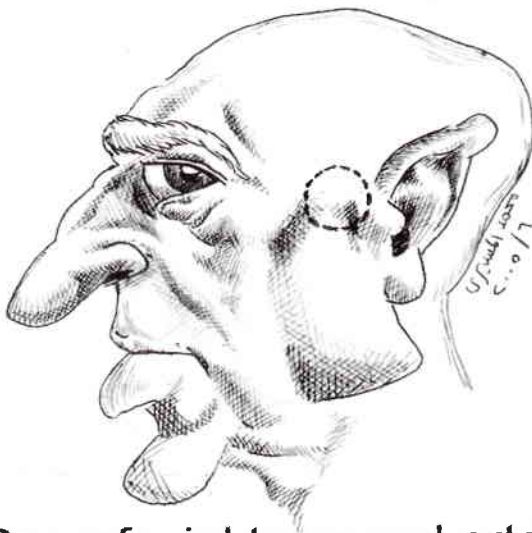
Dorsalis pedis a.



Sub - Clavian artery

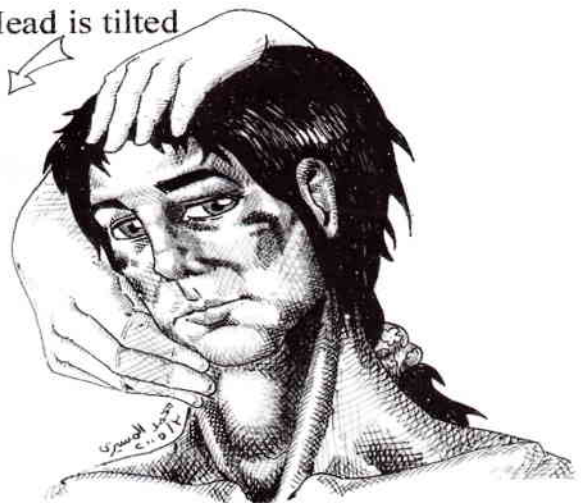


Popliteal artery

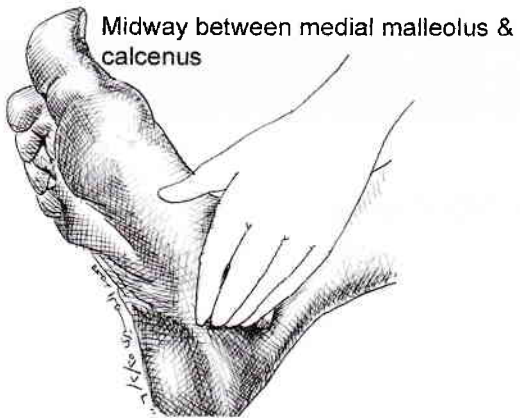
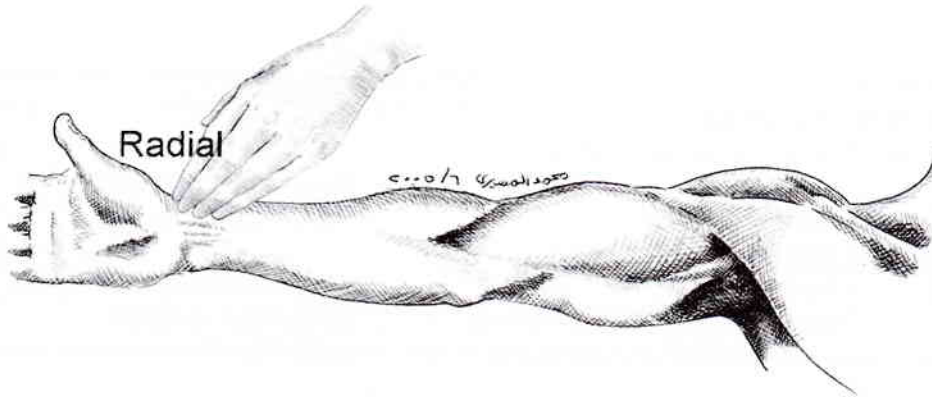
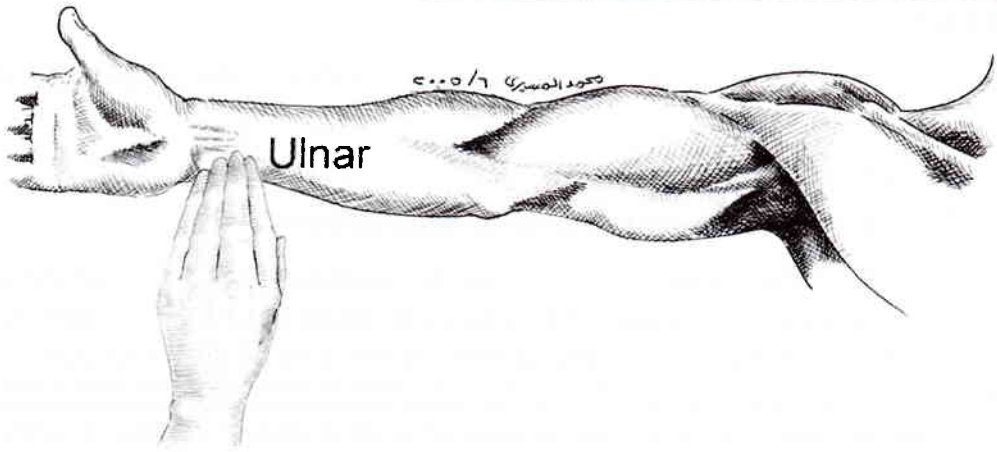


Superficial temporal artery

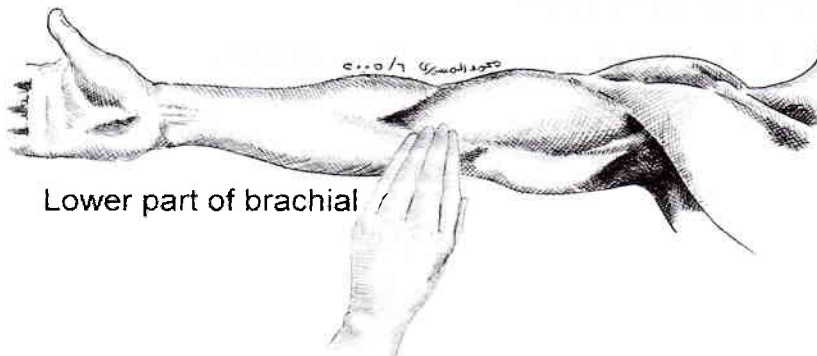
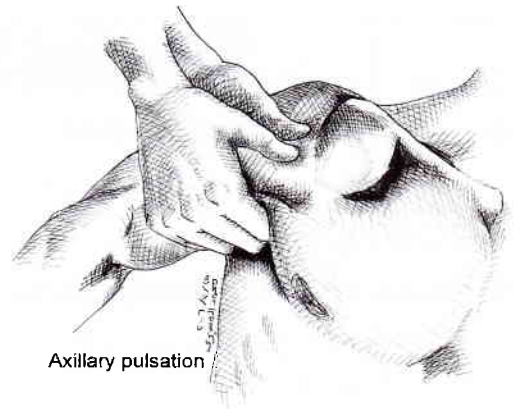
Head is tilted



Carotid pulsation



Post. Tibial artery



Auscultation:

- Along the course of the vessels (systolic bruit in case of aneurysm or stenosis).

Ausculatory test:

- To detect the site of arterial obstruction.
- The main vessel is occluded by pressure while Stethoscope over the vessel, release the pressure (loud sound → vessel is patent. Nothing heard → obstruction at the site of stethoscope)

Browse's introduction to the symptoms & signs of surgical disease/ Ch7the arteries/ P175

Chronic ischemia:

Either affects the upper limb as in:

- | | |
|---------------------|-------------------------|
| - Cervical rib. | - Raynaud's disease. |
| - Burger's disease. | - Peripheral arteritis. |

Or lower limb as in:

- | | |
|----------------------------------|-------------------------|
| - Atherosclerosis. | - Burger's disease. |
| - Diabetic (presenile ischemia). | - peripheral arteritis. |

Special Investigations

→ Laboratory investigation:

CBC, Hb%, blood sugar, lipid profile, blood urea.

→ ECG

→ Radiological investigations:

Doppler & Duplex US.

Plain X- ray.

MRA.

→ Angiographic investigation:

Angiography, digital subtraction angiography.

Provisional Diagnosis

1. Etiological → atherosclerosis or Burger's disease.

2. Anatomical → Ischemia of UL or LL.

3. Pathological → Acute or chronic ischemia.

4. Functional diagnosis

Degree of ischaemia: Advanced ischemia is diagnosed by:

- Short Claudication time & distant.
- Long time of rest pain.
- Fixed color changes.
- Loss of Sensation.
- Small Burger's angle.
- Long Venous filling time.
- Sluggish capillary Circulation.

Level of arterial obstruction: Diagnosed by:

A. History:

- Site of Claudication.

B. By examination:

- Site of change of temperature.
- Site of muscle weakness.
- Site of sensory loss.
- Site of loss of arterial pulsations.

C. By investigations:

5. Complications → gangrene → moist or Dry septic or aseptic

6. Associated condition → DVT, T.B., diabetes, chronic bronchitis...etc

Limb Ischemia

CASE 1:

CHRONIC ATHEROSCLEROTIC LIMB ISCHEMIA

Q. What is your diagnosis?

A.
Chronic atherosclerotic limb ischemia of the right (left or both) lower limb.

Q. how you reach this diagnosis?

A.
Atherosclerotic:
Because the patient is old age:

- He has symptoms suggestive of atherosclerotic ischemia in some visceral organs (coronary ischemia, cerebral ischemia).
- Some accessible arteries (e.g. radial & carotid arteries) are felt rigid tortuous suggesting atherosclerosis.
- The level of obstruction is high.

Chronic ischemia:

Because there are the symptoms & signs of chronic ischemia as follow:

Symptoms

- Claudication pain (It is a cramp-like pain in the muscles that appears on exercise and disappears on rest).
- Rest pain (It is a severe burning pain in the toes and dorsum of the foot due to nerve ischemia).

Signs

- Color changes.
- Trophic changes (hair loss which is the first trophic change to appear atrophic dry scaly skin with fissured toe nails, ischemic trophic ulcers, thin tapering toes -due to loss of subcutaneous fat- tenia pedis, paronychia, dry gangrene).
- Coldness and lost distal pulses.

Q. What is the differential diagnosis of leg pain?

A.

1. Artery: ischemia.
2. Vein: varicose vein.
3. Nerve: sciatica, peripheral neuropathy.
4. Bone: Flat foot, osteoarthritis of knee.

Q. What is differential diagnosis of claudication pain?

A.

1. Chronic ischemia.
2. Osteoarthritis → pain on the first step.
3. Lumbar prolapsed → pain not relieved by standing still.
4. Venous claudication →
 - ↑ On prolonged standing.
 - ↓ On lying flat.
5. Flat foot → pain on standing or walking (due to pressure on plantar nerves).

Q. What is Boyd's classification?

A.

- Grade I → claudication passes off on continued walking.
- Grade II → the pain persists but does not force the patient to stop walking.
- Grade III → The pain increases and forces the patient to stop walking.

Q. What is the pathogenesis of claudication pain?

A.

- It is due to muscle ischaemia, which leads to accumulation of metabolites failed to be washed by blood, leading to stimulation of nerve endings during exercise and gradually washed during rest.
- The site of these claudication pains indicates the level of arterial occlusion as follow:

- Gluteal claudication (Bilateral)	=	Aorto-iliac obstruction
- Thigh claudication	=	Iliac obstruction
- Calf claudication	=	Femoro-popliteal obstruction
- Sole claudication	=	Tibio-peroneal obstruction

Q. What about rest pain?

A:

- It is a severe burning pain in the toes and dorsum of the foot due to nerve ischemia. It increases more during night or by warmth and is increased on elevation of the foot.
- The patient feels comfortable by uncovering the limb, lowering his leg and rubbing the dorsum of the foot.
- Rubbing act by the following mechanisms:
- Rubbing dorsum of foot leads to stimulation of proprioceptive fibers.
- (GATE THEORY)→
 - Nerve fibers carrying proprioceptive & pain sensations have the same termination in the spinal cord, i.e. the same gate.
 - So, stimulation of proprioceptive fibers makes the "gate" busy for receiving pain stimuli.

- Rest pain indicates that:
 - This patient has a severe limb ischemia.
 - Gangrene is imminent.
 - This patient is for doing direct arterial surgery if the conditions are feasible.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P181

Q. What is the claudication distance and what is the claudication time?

A:

- It is the distance at which the patient starts to experience pain
- It is the time that patient can walk on treadmill until the onset of pain.
- They reflect the degree of ischaemia.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P180

Q. What is the rest time?

A:

- Time of rest needed to start walking again it gradually increases as the disease progresses.

Q. What pulses are lost in this patient?

A:

- Pedal and popliteal pulses (for example)

Q. What is the "disappearing pulse"?

A:

- In early ischaemia, pulsations may be felt but they disappear on exercise.

This phenomenon is called the disappearing pulse.

Q. What are the colour changes you look for in a case of ischaemia?

A:

These are;

1. POSTURAL COLOUR CHANGES:

- They are present in moderate and severe ischaemia.
- They include: Pallor on elevation of the foot and cyanosis on dependency.

2. FIXED COLOUR CHANGES:

- They are present in severe ischaemia
- They are unrelated to posture (i.e. present whatever the position of the limb)
- The colour of the foot may be:
(Pallor, Rubor, cyanosis, dusky; mottled, purple, bright red speckling)

3. CAPILLARY CIRCULATION:

- Press and see how color fades.
- It is looked for in the nail bed.
- It is sluggish in ischaemia and lost in gangrene.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P175

Q. What is Burger's angle?

- A:**
- It is the angle at which the limb becomes pale on elevation; we look for pallor in the sole of the foot.
 - It signifies severity of ischemia. So, if it is below 20° , it indicates a severe ischemia.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P175

Q. What is guttering of veins?

- A:**
- Normally, on elevation of the leg, superficial veins of leg empty but not completely.
 - In advanced ischaemia, on elevation of the leg at $10-15^\circ$.
 - Veins empty completely and appear as pale blue gutters.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P175

Q. How do you measure the "venous refilling time"?

- A:**
- The leg is elevated until the veins empty and then it is allowed to be dependant and the time needed for the veins to refill is recorded.
 - Normally, they take 10-15 seconds.
 - Up to 30 sec. = mild ischaemia.
 - > 2 minutes = impending gangrene.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P175

Q. What are the characters of ischaemic ulcer?

- A:**
- Painful, non-healing ulcer.
 - Site $\rightarrow$ commonest on toes and dorsum of foot (least blood supply), around the malleoli.
 - Edge $\rightarrow$ punched out.
 - Margin $\rightarrow$ hyperemic.
 - Floor $\rightarrow$ granulation tissue or pus.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P185

Q. What are the functional disturbances you look for in chronic limb ischaemia?

- A.**
- Impotence (as in LeRiche Syndrome).
 - Sensations: Sensory loss; hyperesthesia (In areas close to gangrene).
 - Muscle atrophy and loss of strength(Vastus medialis is the first muscle to be affected)
 - Flexion deformity of the knee (due to rest pain).

Q. When do you expect to find sensory loss in chronic limb ischaemia?

A:

1. From the cause: Diabetic neuropathy.
2. From the complications: Impending gangrene.

Q. In which cases you can feel the arterial wall?

A:

1. Systemic atherosclerosis.
2. Monckeberg sclerosis (degeneration of media followed by calcium deposition).
3. Polyarteritis nodosa (Grape-like swelling).

Q. What are the causes of warm limb in a case of ischemia?

A:

1. Covered limb.
2. Infected limb due to hotness of inflammation.
3. Under treatment by sympathectomy which lead to cutaneous vasodilatation
4. Diabetes Mellitus in which the patient is already sympathectomized.

Q. How do you know the level of occlusion in any case of ischaemia?

A:

The level of occlusion can be determined from the following:

1. Level of claudication.
2. Level of coldness.
3. Level of hair loss.
4. Level of absent pulse.
5. Presence of impotence with bilateral L.L. ischaemia suggests aorto-iliac block (LeRiche syndrome).

Q. How can you evaluate the degree of ischaemia?

A:

- From the following:
 - Degree of pain:
 - Claudication distance, claudication time, period of rest after claudication
 - Presence of rest pain = severe ischaemia.
 - Degree of colour changes:
 - Burger's angle $< 20^\circ$ = severe ischaemia.
 - Presence of fixed colour changes = severe ischaemia.
 - Venous refilling time:
 - N. = up to 10 sec., 10-30 sec. = mild ischaemia
 - > 2 min. = severe ischaemia
 - Capillary filling time (> 30 sec. = severe ischaemia) .
 - Reactive hyperaemia test
 - (A sphygmomanometer cuff is inflated around the limb 250 mm Hg for 5 minutes and then measure the interval between releasing the cuff and the appearance of red flush in the skin.
 - In the normal limb, it appears within 1-2 seconds. In a severely ischaemic limb, it may never appear.

-
- Presence of gangrene or pregangrene = severe ischaemia.
 - Loss of touch sensation = severe ischaemia.

Q. What is pregangrene?

A:

1. Rest pain + colour changes.
2. Ankle / Brachial Index < 0.3 (critically ischemic limb).

Q. What investigations do you ask for?

A:

- Investigations for diagnosis:-
 - Doppler, Duplex.
 - Angiography (it is only a preoperative investigations which is not done unless operation is planned).
 - MRA.
- Other system evaluation (very important):-
 - CBC, FBS, KFT, LFT.
 - ECG, CXR, Chest wall mapping stress test.

Q. Comment on angiography?

A:

- It is indicated in:
 - Only preoperative investigations not performed unless operation is planned).
- It is contraindicated in:
 - 1) Distal occlusion.
 - 2) Extensive gangrene.
- Types of angiography:
 - Conventional angiography : Using Seldinger needle and arterial catheter
 - Digital subtraction angiography: After injection of an intravenous contrast medium (It is less invasive).
 - MRA (Magnetic resonance angiography).
- The value:
 - It shows the following :
 1. Site of obstruction.
 2. Length of obstruction.
 3. Degree of obstruction.
 4. State of the artery.
 5. State of collateral circulation.
 6. State of distal run off.
 - The most valuable stigmata of angiography are :
 1. State of collateral circulation.
 2. State of distal run off.
 - The complications of conventional angiography are:
 1. Anaphylaxis.
 2. Hemorrhage.
 3. Arterial spasm.
 4. Thrombosis.
 5. Dislodgment of atheromatous plaque and embolization.
 6. Dissecting aneurysm.

Q. How the blood flow detected by the Doppler ultrasound used in a case of limb ischaemia?

A:

- It gives accurate information about:
 1. The diameter and cross sectional areas of the artery.
 2. Blood flow rates and velocities.
The blood flow detected by the Doppler ultrasound used
 - To detect blood flow along an artery: triphasic normally, monophasic in ischemia
 - To detect blood pressure at sites where arterial pulse cannot be palpated e.g. ankle pressure.
 3. Presence of stenosis.

Q. What are the values of determining the blood pressure by Doppler?

A:

- Ankle / brachial index:
 - Normally the resting ABI > 1.
 - Below 0.9 = ischaemia.
 - Between 0.9 and 1 = equivocal.
 - Below 0.3 = rest pain.
- 1. Ankle pressure response curve: This denotes the state of collateral circulation.
- 2. Segmental pressure: gives an indication of the site of obstruction.
- 3. Helpful in deciding the level of amputation: e.g. if resting pressure in popliteal artery > 100 mm Hg, a below knee amputation will succeed.
- 4. Monitoring the success of arterial reconstruction.

Q. What are its values?

A:

- It gives accurate information about:
 1. The diameter and cross sectional areas of the artery.
 2. Blood flow rates and velocities.
 3. Presence of stenosis.

Q. What is the treatment of chronic atherosclerotic limb ischaemia?

A:

A. Conservative management:-

If the disability is mild or if the operation is not technically feasible:

The conservative management is indicated. It includes:

1. Care of patient:

- Good diet.
- Cessation of smoking.
- Correct anemia.
- Weight reduction.
- Control DM & any associated disease.

2. Care of foot (especially in diabetics):

- Good hygiene → Carefully washed, dried and powdered & Left exposed.
- Avoid cutting angles of the nails, avoid tight shoes.
- Infections are treated properly.
- Light exercise as walking (improves collaterals), should not be heavy not to produce ischemic pain.

3. Some drugs:

- Disease associated → HTN, DM.
N.B. some antihypertensives particularly BB may exacerbate claudication.
- Raised blood lipids: statins.
- Anti-platelet agents: aspirin, Trental®.
- Vasodilators as CCBs.

B. Endovascular surgery:-

1. Percutaneous Transluminal Angioplasty (success rate 95%)

❖ Indications (as endarterectomy)

- Short segment affection in a big vessel.
- Not done in occlusion below knee level.

❖ Complications:

- Recurrence.
- Hematoma.
- A-V fistula.

2. Intraluminal Stent: (after ballon angioplasty)

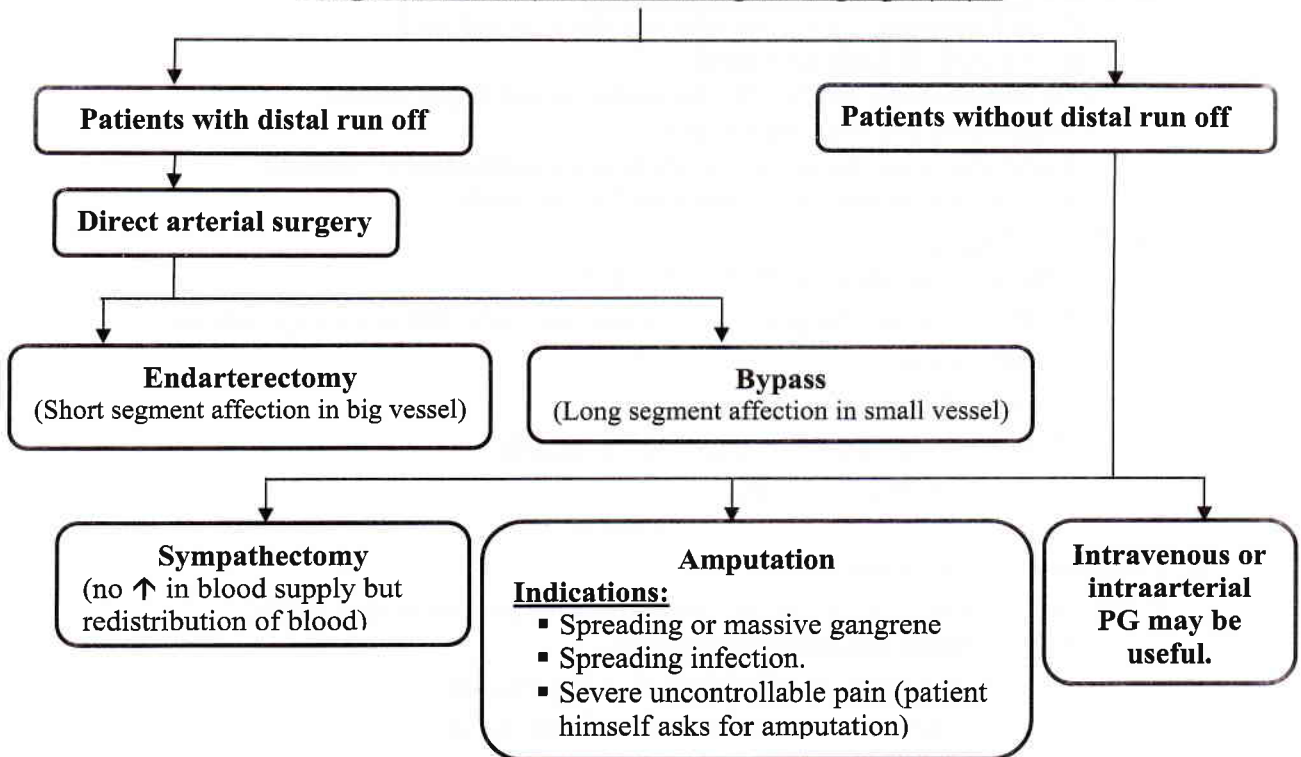
C. Surgical treatment

(Surgery in this case aims in saving the limb and thus called limb salvage surgery)

⇒ Indications of surgery (=late ischemia)

1. Starting gangrene (to avoid spread of gangrene).
2. Pregangrene.
3. Severe claudication pain interfering with patient's work (differs according to each patient).
4. Ulcers resistant for healing.

Surgical techniques (according to angiography):



Q. Comment on direct arterial surgery?

A:

- Indications of direct arterial surgery include:
 1. Rest pain is an absolute indication.
 2. Claudication pain is a relative indication (if incapacitating the patient).
 3. Ischaemic ulceration that does not respond to conservative measures.
 4. Rapid deterioration of an already ischaemic limb.
- Types:
 1. **Arterial bypass grafting.**
 - Types of materials used in arterial bypass grafting may be:
 - Synthetic: not suitable for the peripheral use because the smaller caliber of these grafts tend to thrombose easily.
 - Natural:
 - Dacron (woven or knitted).
 - Gortex made of polytetrafluoroethylene (PTFE).
 - Saphenous graft (in situ or reversed).
 - Internal mammary artery.
 - Umbilical vein.
 - Banked arterial graft.
 2. **Thrombo-endarterectomy (not done now).**
 3. **Angioplasty**
 - Using interventional radiology, balloon transluminal dilatation of a stenotic lesion is done.
 - A thick plaque can also be split after this balloon dilatation.
 - Recently, a stent can be applied. It is indicated in the very localized (single, less than 1 cm) stenotic lesions.

Q. Comment on sympathectomy in chronic atherosclerotic limb ischemia?

A:

■ Indications in chronic atherosclerotic limb ischemia:

1. If there is no distal run off (not feasible for surgery) and there are small ulcers or mild rest pain.
2. Many surgeons combine sympathectomy with direct arterial surgery.
4. Vasospastic disorders as Raynaud's disease.
3. After amputation to help healing of the flaps.

■ Contraindications in chronic atherosclerotic limb ischemia:

1. Intermittent claudications (worsens the muscle ischaemia).
2. Gangrene (ineffective).
3. Diabetic patient (peripheral neuropathy).

The types of sympathectomy

- Paravertebral sympathetic block:
- Temporary (2-3 days) if 1 % lignocaine is used.
- Permanent if 5 % of phenol in water is used removing 2nd and 3rd lumbar ganglia.

There is preoperative test can be done to detect the benefit from sympathectomy:

- By doing the reflex vasodilatation test (describe) or by doing temporary sympathectomy (Paravertebral sympathetic block by 1% lignocaine).
- If the limb becomes warm and red, this means that there was some arterial spasm and the patient would benefit from sympathectomy.

Q. What are the indications of amputation in chronic atherosclerotic limb ischemia?

A:

There are two types of amputation to be done in chronic limb ischaemia:

1. Conservative amputation:

- If the blood supply to the area adjacent to the area of gangrene is good or can be improved, a line of demarcation appears and separation occurs. In these cases, conservative amputation can be done by either excision of a toe at the line of separation or mid tarsal or trans metatarsal amputation is done if gangrene affects the forefoot.

2. Urgent High amputation :

Below knee or above knee depending on whether the popliteal pulse is felt or not.

This is indicated in

- Spreading gangrene endangering the patient's life.
- Uncontrollable infection and toxemia endangering the patient's life.
- Severe pain deteriorating the general condition of the patient.

Q. Comment on gangrene?

A:

■ Definition: It is death and putrefaction of tissues.

■ The causes of gangrene

1. Ischemic : Acute and chronic ischemia
2. Traumatic:
 - Direct (bedsores, pressure sores, and crushes)
 - Indirect (arterial injuries)
3. Physicochemical injuries: Burns, caustics and frost bite
4. Neuropathic: Syringomyelia and leprosy
5. Venous gangrene

- The types of gangrene:
 - Dry (occurs in chronic limb ischemia).
 - Moist aseptic :occurs in chronic limb ischemia on top of an edematous limb
 - Moist septic: occurs in chronic limb ischemia on top of secondary infection.
- The cardinal signs of gangrene:
 1. Lost function.
 2. Lost sensation.
 3. Lost pulsations.
 4. Lost capillary circulation.
 5. Lost heat.
 6. Changed colour.

The gangrenous part passes through a variety of shades, pallor, dusky gray, mottled, purple, until it finally becomes black, green, or brown.

Q. What are the cardinal signs of acute ischaemia?

A:

- Paralysis, pain, pallor, Pulselessness, Paraesthesia and coldness

Q. How to differentiate between acute embolic and acute thrombotic ischaemia?

A.

	EMBOLIC	THROMBOTIC
History	Cardiac troubles	Intermittent claudication
Commonest site	Bifurcation of common femoral	Lower end of femoral
Source of emboli	Present	Absent
Loss of function	Within 4-6 hours e.g. patient unable to move toes	Doesn't occur within hours as collaterals have had time to be established
Angiography (if in doubt)	Complete abrupt occlusion of the artery with no run off	
	No collaterals May be crescentic Artery above is normal	Some collaterals Not crescentic Artery above shows atherosclerosis

Q. What is atherosclerosis?

A:

- A degenerative disease due to aging affecting the whole arterial system.
- Its pathological process is the atheroma, which is a subintimal collection of a lipoid plaque causing elevation and ulceration of the overlying endothelium.
- It affects large and medium sized arteries.

Q. What is cruciate anastomosis?

A:

- Cross-shaped anastomosis lies on the upper part of the back of the thigh, formed of:
 1. Upper limb → superior & inferior gluteal arteries.
 2. Lower limb → ascending branch of the first perforator
 3. Rt. & Lt. limbs → Medial & lateral circumflex femoral arteries.Blood reaches the lower limb in case of occlusion of external iliac or femoral artery through this anastomosis.

Case 2: ARTERITIS

Q. What is your diagnosis?

A.

Chronic limb ischaemia of both lower limbs and both upper limbs.

Q. Why do you diagnose chronic limb ischemia in this case?

A.

Because there are the symptoms & signs of chronic ischemia as follow:

Symptoms

- Claudication pain (It is a cramp-like pain in the muscles that appears on exercise and disappears on rest).
- Rest pain (It is a severe burning pain in the toes and dorsum of the foot due to nerve ischemia).

Signs

- Color changes.
- Trophic changes (hair loss which is the first trophic change to appear atrophic dry scaly skin with fissured toenails, ischemic trophic ulcers, thin tapering toes -due to loss of subcutaneous fat- taenia pedis, paronychia, dry gangrene).
- Coldness and lost distal pulses.

Q. What is the etiology of ischemia in this case?

A.

Most probably, it is due to arteritis.

Q. What are the causes of arteritis?

A.

1. Burger's disease (thromboangitis obliterans).
2. Takayasu's disease (pulseless disease of females).
3. Collagen diseases: systemic lupus, scleroderma, rheumatoid.
4. Poly arteritis nodosa.
5. Endarteritis obliterans : after radiotherapy and in syphilis.
6. Temporal arteritis.
7. Infective arteritis.
8. Giant cell arteritis.
9. Other causes: Ehler-Danlos, Henoch-Schonlien, Behcet's disease.

Q. Why did you diagnose it arteritis?

A.

	Arteritis	Atherosclerosis
Age of the patient	Usually young (20-50 years)	Usually elderly (> 50 years)
Limbs affected	Usually both lower and both upper limbs	Lower limbs (very rarely it affects upper limbs)
Site of arterial occlusion	Usually distal occlusion (popliteal pulse felt)	Usually proximal occlusion (popliteal pulse not felt)
Manifestations of visceral ischaemia	Absent	May be present (ischemic heart, cerebral, renal and intestinal ischemia)
Manifestations of collagen diseases	May be present (systemic lupus, scleroderma, rheumatoid)	Absent
Atherosclerosis risk factors	Absent	May be present (diabetes, hypertension, obesity)

Q. What investigations do you ask for in this case?

A.

Besides the routine investigations (laboratory investigations and ECG), we ask for investigations to detect the aetiology of this arteritis:

1. To diagnose collagen disease:

e.g. rheumatoid factor for rheumatoid arthritis and antinuclear antibodies for systemic lupus, skin biopsy for scleroderma.

2. Arterial biopsy:

Biopsy is not taken from the main artery but from a small peripheral arteriole as by a skin biopsy.

(Angiography, Doppler, & Duplex are not indicated as the disease is usually a distal occlusion)

Q. What is the treatment of this case?

A.

1. Treatment of the primary cause of arteritis.

2. Conservative measures for the ischaemic limb.

▪ Improving the general health:

- Good diet, good sleep.
- Correct anemia.
- Control any associated disease.

- Protection of the ischemic limb:
 - Carefully washed, dried and powdered.
 - Nails and corns are cut cautiously.
 - Infections are treated properly.
 - Left exposed.
 - Left horizontal.
 - Gangrenous areas are kept dry.
- Pain relief.
- Improving the blood supply to the limb:
 - Exercise for a period < inducing pain.
 - Drugs: trental, prostavasin, & aspirin.
- Reduction of the rate of progress of the disease:
 - Stop smoking.
 - Weight reduction.
 - Proper control of diabetes.
 - Proper control of any associated disease.

3. Sympathectomy may be beneficial in some cases.

4. Conservative amputation of gangrenous toes and fingers.

Q. Comment on Burger's disease?

A.

- This is an occlusive disease of small arteries (tibials, planters, radial) of unknown cause, occurring in smoker young adult males.
- Pathologically, the whole neurovascular bundle is inflamed (panvasculitis and neuritis) with occlusion of the affected arteries.
- The disease is patchy in distribution and episodic in its course.
- The disease does not affect females and does not affect non-smokers.
- It is treated by:
 1. Smoking must be stopped.
 2. Sympathectomy: Gives good results.
 3. Amputation :
- Gangrene usually involves toes or fingers so that a conservative amputation will be enough (e.g. amputation of a toe, trans metatarsal amputation if several toes are affected but a long planter flap is required).
- If the foot is involved, below knee amputation is indicated.

Q. Enumerate vasospastic diseases?

A.

1. Raynaud's disease.
2. Acrocyanosis.
3. Erythrocyanosis.
4. Erythromyalgia.
5. Sudek's atrophy.

Q. What is Allen's test?

A.

- It is used to determine dominant blood supply of the hand either radial or ulnar artery.
- Ask the patient to close his hand firmly and press upon both radial & ulnar arteries to occlude them. Ask the patient to open his hand and relieve the pressure on one artery and observe the rate of the normal color of the hand, repeat the test with pressure relieved from other artery.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P192-196

Other Oral Qs

Q.causes f chronic leg ulcers?

A.

- 1- Chronic traumatic ulcer: eg. wounds, burns , irradiations, bed sores .
- 2- Inflammatory ulcers: - chronic osteomyelitic
-chronic specific ulcer (rare): TB,\$, actinomycosis
- 3- Neoplastic ulcers: 1 ry skin tumor —→ Squamous cell carcinoma
↳ Malignant melanoma
→ Malignant ulcer on top of chronic begin ulcer
→ Ulcerating deep malignancy as osteosarcoma , fibro sarcoma
- 4- Vascular ulcer: - Ischemic
- Venous
- lymphedema
- 5- Neuropathic ulcers: eg diabetic foot ulcer
- 6- Blood disease : sickle cell crisis
- 7- A.I disease : SLE, Rh. arthritis

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the arteries/ P186

Q. Causes of ischemic ulcerations?

A.

- Large artery obliteration: - Atherosclerosis
- Embolism
- Small artery obliteration: - Scleroderma
- Burger's
- Embolism
- Diabetes
- Trauma

- 9 -

**VARICOSE VEINS
SHEET**

Varicose Veins Case Sheet

History

Personal H:

Name, Age, Sex, Marital status, special habits of medical importance
Address, Residence, Occupation, & if ♀ → menstrual history.

- Age → 1ry VV. more bet. 20-40 years.
- Sex → 1ry VV. more in females.
- Occupation → Prolonged standing.
- Marital state → VV occur commonly with pregnancy.

Complaint: بلفظ المريض إليه اللي جابك المستشفى

- Pain, Disfigurement Or complications + duration.

HPI: آخر مرة كنت سليم امتي

- Analysis of the condition in a chronological manner: its

ONSET, COARSE AND DURATION.

1. If the patient mentioned that he observed these veins in his lower limb, stress on the following.
 - **Where is the initial site if their appearance on his limbs**, proximal or distal, unilateral or bilateral and any observed veins on the abdominal wall, on the genitalia or the buttocks?
 - **Is there any history of previous direct trauma?**
2. **If there is a history of pain in the limb, try to conclude the following characters:**
 - If it is a localized aching type of pain in the calf region, initiated by prolonged standing for many hours and partially improve by walking, while completely relieved y lying flat, especially with elevation of the lower limb. (this is usually seen in cases of primary v.v.).
 - While, if the pain is severe and expressed by the patient as a sense of bursting type of pain at the calf region or throbbing pain at the ankle region. This pain usually initiated by standing for a **short time** and worsen on walking, and usually accompanied with considerable edema, while lying flat for sometime, usually relieves it (this is seen in patient with 2ry post phlebitis v.v.).
 - From the analysis of the pain characters and the varicose distribution, you can reach to which type of varicosities you face, even in silent cases of DVT. But your data could be confirmed if you ask and find a positive history of DVT or any predisposing factors preceding that history as:
 - i. Ask about previous history of acute massive swollen painful limb (DVT).

- ii. Ask about previous history that necessitate prolonged immobilization as in fever, gastroenteritis, fracture, operation...etc.
- iii. In females, ask about any congenital troubles as well as contraceptive pills "increases the coagulability of blood", or loops "ascending endometritis and parametritis".
- iv. Ask about any associated **flat foot, varicocele, hernia and piles**. The presence of any of them may be a part of congenital weak mesenchymal defect aharacteristic for 1ry v.v.

Past history:

- History suggestive of congenital mesenchymal weakness (varicocele, piles, flat foot or hernias).
- History of pelvic or abdominal swelling
- History of trauma (A-V fistula).
- Contraceptive pills, abortion, puerperal sepsis.
- Similar conditions or recurrence.
- Common diseases: (DM, Hypertension, TB, B, Hepatitis, DVT).
- Drug allergy & intake.
- Blood transfusion.
- Past history of previous operation (pelvic or complicated).

Predisposing
factors
Of
DVT

As usual

Family history:

- Similar condition in one of the members of the family (may be positive in 1ry V.V)
- Consanguinity.

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Examination

General :

- Body built.
- Decubitus.
- Facial expressions.
- Complexion → (3 colors) Jaundice, pallor & cyanosis.
- Chest & heart (A-V fistula → HF).

3 اسطمية

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

- Abdomen:
 - Visceroptosis, masses, scars of operations.
 - Dilated veins crossing the groin.
 - Abdominal hernias.
- Back: kyphosis.
- Scrotum: varicocele.
- P / R: piles.
- Extremities.
- Pulse: water-hammer pulse & Branham's sign (in A-V fistula)
- Blood pressure: hyperdynamic circulation (in A-V fistula)
- Temperature.
- Head, Neck, Spine → تانيين 3

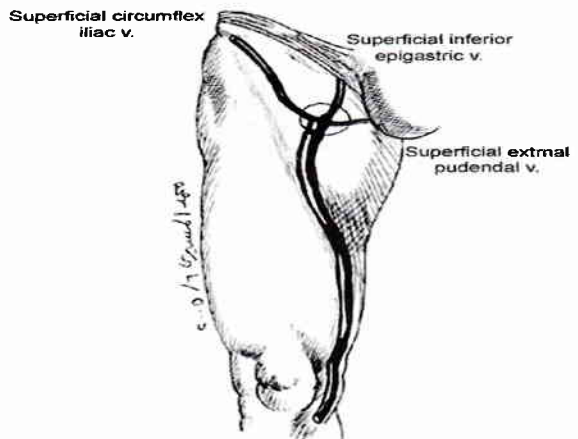
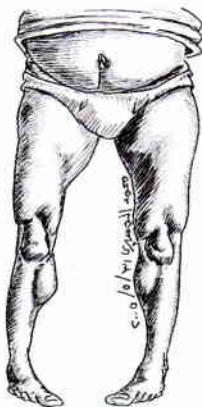
Local: سلم على العيان و قف على يمينه



Exposure → from Umbilicus downward → to expose the groin:

Why: to inspect upper 3 tributaries of saphenous vein crossing → inguinal ligament → superficial circumflex iliac, superficial epigastric, Superficial external pudendal.

(If 2ry v.v. & obstructed femoral vein above the sapheno-femora ljunction)



1- Inspection: (لف رجلك أمامي) كلمة السر + من اتجاهين

a. Both L.L. are symmetrical (because of congenital arterio-venous fistula causes local gigantism).

b. There is localized swelling:

1. Blow out.

2. Dilated vein:

→ Medial side of thigh → long saphenous.

→ Lateral side of thigh → short saphenous.

→ Describe shape of varicosities:

- Mild tubular varicosities.
- Tubular.
- Serpentine.
- Saccular "blow out".

→ The saccular type is usually seen:

- At the saphenofemoral junction denoting saphenofemoral incompetence (saphena varex).
- Opposite incompetent perforators above and below the knee.

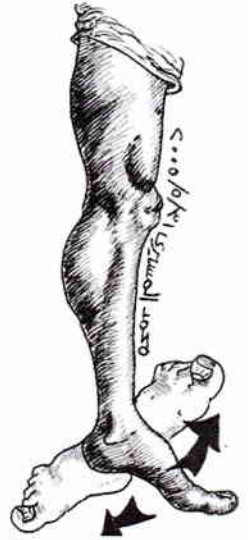
→ Observe the region of the ankle for any brownish pigmentation, eczema or ulcer "describe it".

→ Observe the foot for any flat foot or local gigantism.

→ Observe the circumference of the limb for edema (usually massive in postphlebotic limb).

c. Overlying skin normal → no:

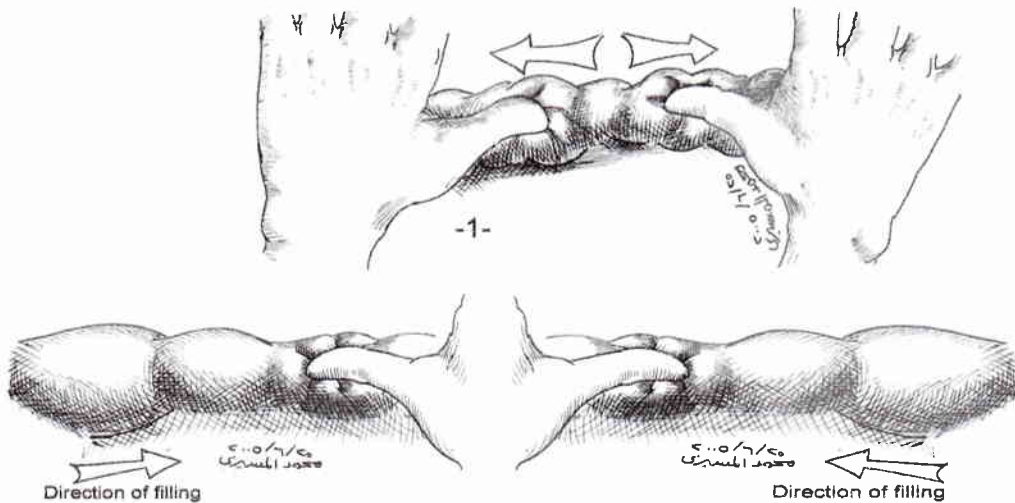
- Ulcer. - Scar.
- Pigmentation. - Edema.



2- Palpation: من فوق لتحت

1. Milking test:

Of the veins crossing the groin to detect the direction of filling.



2. Thrill: كح على الشمال

Put your hand on sapheno-femoral junction:

a) Thrill on coughing → incompetent valve.

b) Machinery thrill over pulsating swelling → A-V fistula.

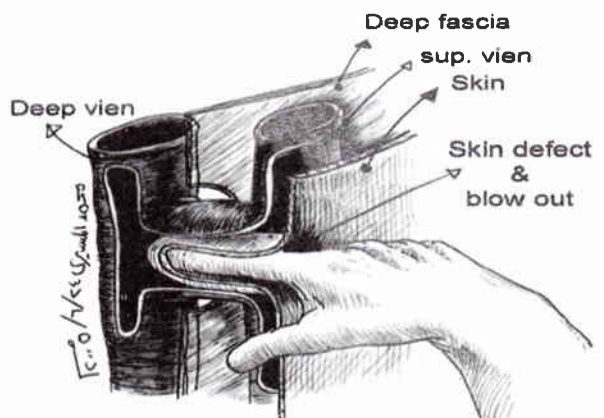
3. Thrombophlebitis:

Hot, tender, cord like.



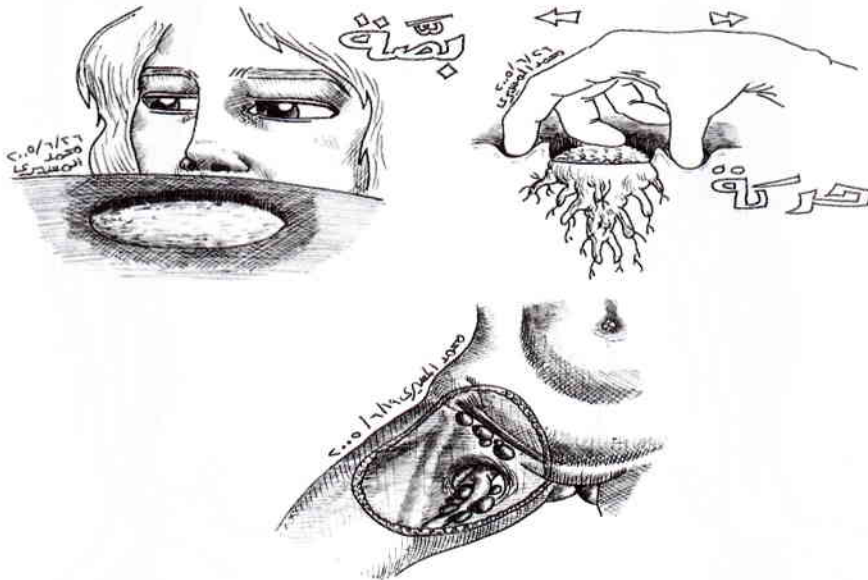
4. Fegan sign: (defect in deep fascia at the site of blow out)

- Mark the site of blow out while patient standing, then palpate at the mark while patient lies down.
- If palpable fascial defect → site of incompetent perforator.



5. **Edema :** → pitting or non-pitting

6. **Ulcer:** (بصة و حركة و ليمف نود)



7. **Draining lymph nodes:**

No examination of a swelling is complete without examination of draining L.Ns

3- **Percussion:** (Tapping):

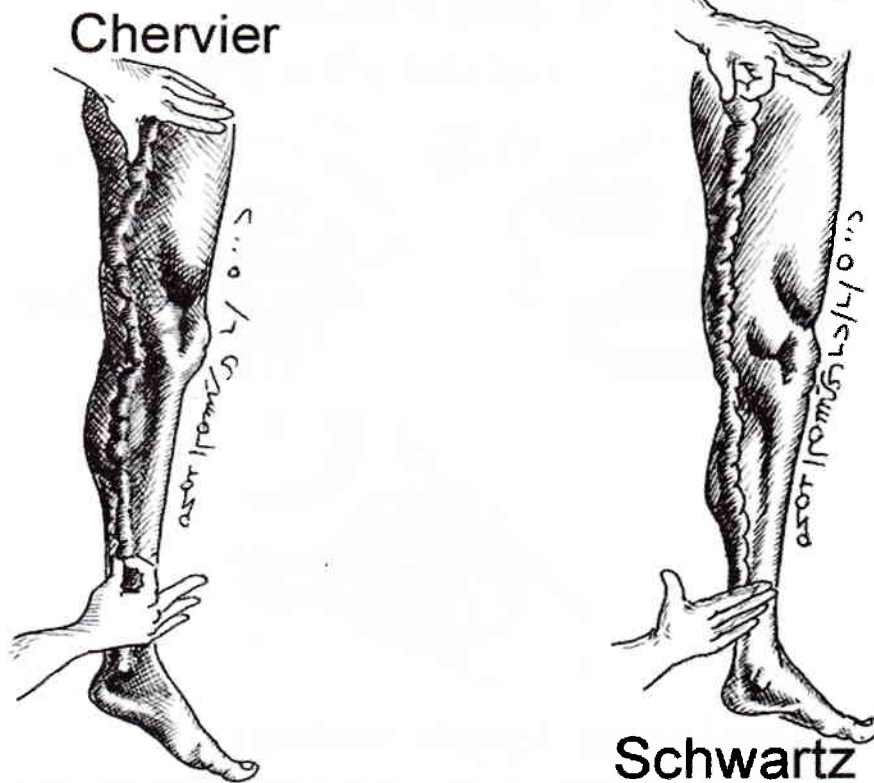
(Schwartz & Chervier)

1- **Schwartz test:**

- If you percuss the upper end of distended vein and an impulse is received at its lower end → incompetent valves in-between.

2- **Chervier test:**

- If you percuss the lower end of distended vein and an impulse is received at its upper end → the dilated vein belongs to:
 - Long saphenous (if you percuss on medial aspect).
 - Short saphenous (if you percuss on lateral aspect).



4- Auscultation: continuous machinery murmur over A-V fistula.

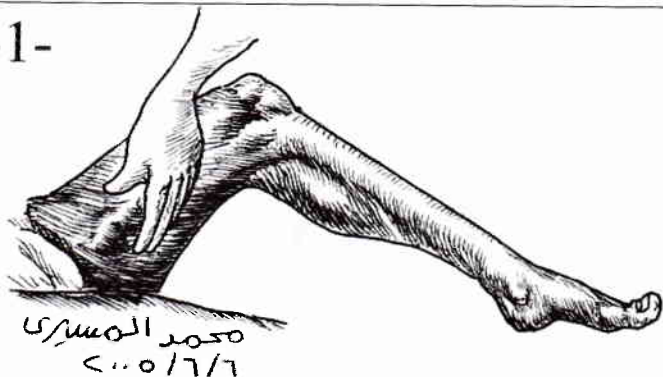
5- Special test:

A- To detect sites of incompetent perforator:

1-Trendlenburg test:

- Pt. lies down.
- Empty the full veins.
- Tourniquet below the saphenous opening.
- Stand up.
- If no filling → then filling occurs on release of tourniquet → incompetent sapheno-femoral junction.
- If filling occurs and increases after release of tourniquet → Incompetent sapheno-femoral & incompetent perforator below.

-1-



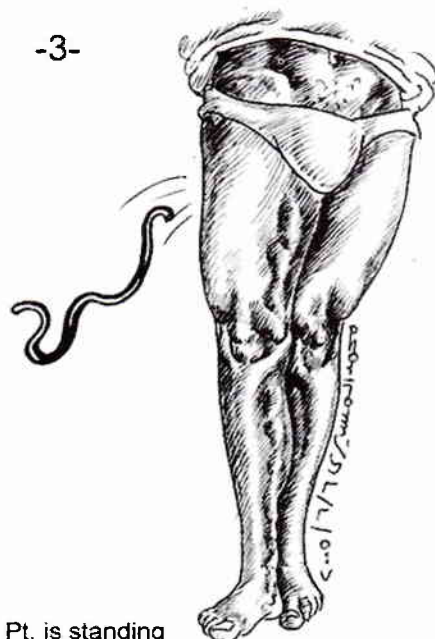
Empty the v. v. while pt. is lying down

-2-



Apply tourniquet below saphenous opening

-3-



- Pt. is standing
- Refilling of the v.v. after removing of the tourniquet

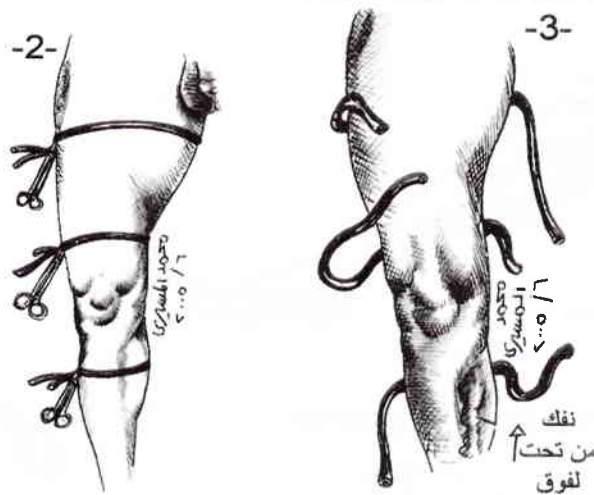
2-Multiple tourniquet:

- Pt lies down.
- Empty the full veins.
- Three tourniquet are applied:
 - a) Below saphenous opening.
 - b) 10 cm above the knee.
 - c) Just below the knee.
- Stand up.
- Any vein fills rapidly under any tourniquet → incompetent perforators

-1-



Empty the v. v. while pt. is lying down



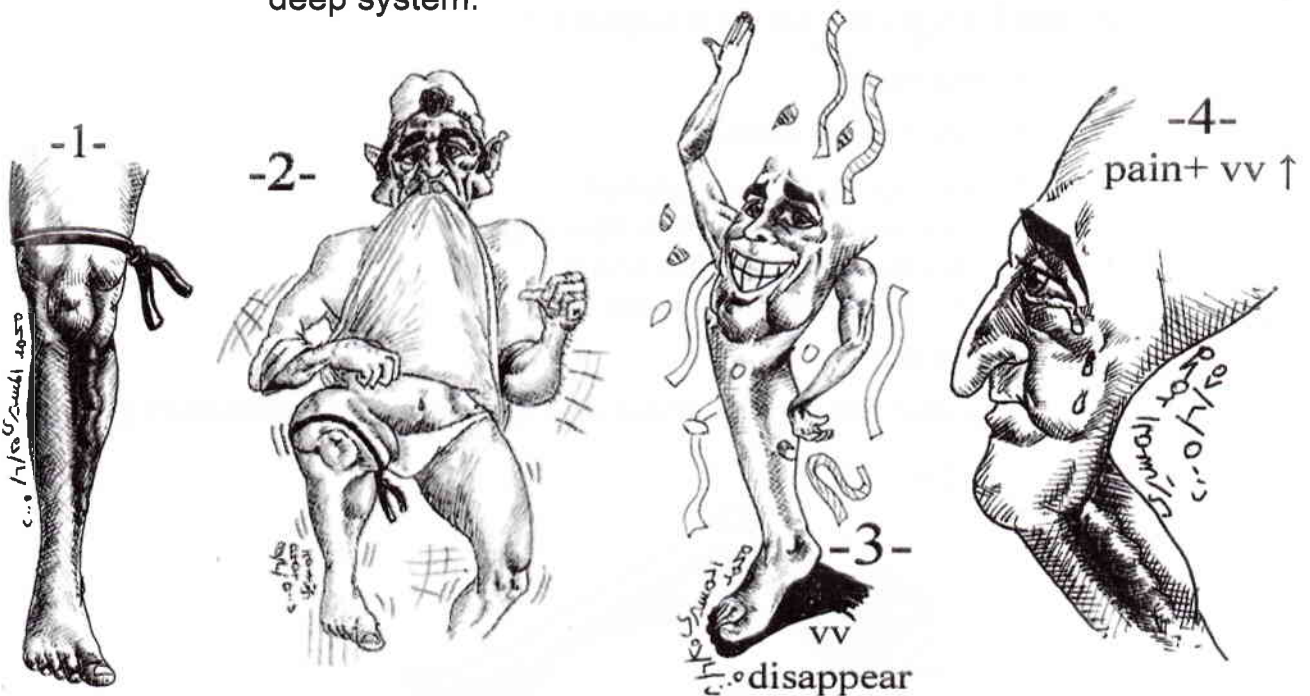
3- Manual Localization (two-finger test):

- While patient is standing, evacuate a segment of the vein and notice filling. If filling occurs inspite of pressure by fingers → underlying incompetent perforator

B- To detect patency of deep system:

1- Modified Perth's test: (objective)

- Tourniquet around the thigh while Pt is standing.
- Ask him to do exercise 5-10 min.
- If veins disappear → patent deep system.
- If veins increased & pain appears → 2ry case with obstructed deep system.



2- Perth's test: (subjective)

- Elastic bandage is applied from toes to upper 1/3 of thigh and patient is asked to do exercise for 5 minutes.
- If patient feels pain → occluded deep system

3- Hoffman's test:

- In patients having incompetent perforators, modified Perth's test shows that venous engorgement remains indifferent after exercise.

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the veins/P197-200

- Therefore, In order to differentiate between 1ry from 2ry V.V with incompetent perforator, apply a constriction bandage just below the lowest incompetent perforator (usually below the knee) and ask the patient to do exercise as with modified Perth's test and notice those veins below the constriction bandage.

- If they engorge more mean 2ry V.V. while if they collapse means. 1ry V.V.

Special investigations

Laboratory investigation:

Hb%, urine and stool analysis, blood sugar, blood urea.

Radiological investigations:

Doppler & Duplex US.

Plain X- ray.

Angiographic investigation:

Venography.

Provisional diagnosis

1. **Etiological** → 1ry or 2ry.

2. **Anatomical** → Short or long system + which perforators are incompetent.

3. **Complications.**

4. **Associated condition** → DVT, T.B., diabetes, chronic bronchitis....etc.

How could you differentiate between venous edema and filarial lymphoedema

Venous edema	Filarial lymphoedema
<u>Acute phase :</u> ▪ Sudden severe painful swollen limb. ▪ Tense tender calf muscles. ▪ Positive Homan's sign.	<u>Acute phase :</u> ▪ Only in the filarial type ▪ Recurrent attacks of general constitutional manifestations. ▪ Diffuse swollen red painful limb.
<u>Chronic phase :</u> ▪ Pain is severe on standing. ▪ Oedema does not preserve the ankle crease. ▪ The skin is thin, stretched, and easily ulcerate. ▪ Accompanied with pigmentation, eczema and ulceration around the ankle. ▪ Secondary varicose veins are common association. ▪ Oedema always pitting.	<u>Chronic phase :</u> ▪ No pain, just heaviness. ▪ Oedema preserve the ankle crease. ▪ The skin is thick, hyperkeratotic, warty, and does not ulcerate. ▪ No pigmentation, eczema or ulceration around the ankle. ▪ No associated varicose veins. ▪ Early it is pitting but later becomes non pitting.
<u>Investigation :</u> Acute phase: ▪ Radioactive labeled. ▪ Fibrinogen scanning. Chronic phase: ▪ Venography.	<u>Investigation :</u> Acute phase: ▪ Mid night blood film. ▪ Shows the microfilaria. Chronic phase: ▪ Lymphangiography.
<u>Treatment:</u> ▪ Essentially conservative.	<u>Treatment:</u> ▪ Early, conservative. ▪ Surgery.

Varicose Veins

Case 1. PRIMARY VARICOSE VEINS

Q. What is your diagnosis?

A. Primary varicose veins affecting the long saphenous vein with incompetent complicated by

Q. How you reach this diagnosis?

- A.
- **From History:**
 - The type of patient:- patient around 30 years works as with prolonged standing.
 - Pain: is mild compared to the marked pain that occurs in 2ry varicose veins.
 - Swelling: Evening ankle oedema which resolve after night sleep compared to persistent diffuse leg oedema that is not relieved by night sleep in 2ry varicose veins.
 - Disturbance of function: Skin complications are often present in 2ry varicose veins and are extremely rare in 1ry varicose veins.
 - No past history, suggestive of deep vein thrombosis or prolonged recumbence or fever (in 2ry varicose veins, this history may be +ve)
 - **From General Examination:**
 - There are signs suggestive of **generalized elastic tissue deficiency** e.g. kyphosis, visceroptosis, flat foot, varicocoele, piles, hernia, etc.
 - No pelvic or abdominal swelling that may be a cause of 2ry varicose veins.
 - **From Local Examination:**
 - Distribution
 - Usually bilateral
 - Never cross the groin
 - Affects saphenous veins
 - Pattern
 - Mainly tubular varicosities
 - Edema
 - Minimal ankle edema
 - Skin complications
 - Very rare.

Q. In which cases Veins crossing the groin present

A.

- In case of iliofemoral DVT.

Q. Mention the different types of pain that may occur in a case of varicose veins?

A.

- Dull ache or heaviness: this is the usual type; occurs in the leg and foot aggravated by long standing and sitting and relieved by elevation of the foot.
- Burning pain: in superficial thrombophlebitis.
- Throbbing pain: late in superficial thrombophlebitis.
- Bursting pain: in DVT.

N.B: -In 1ry V.V pain ↓ on walking.
-In 2ry V.V pain does not decrease.

Q. What are the complications of varicose veins?

A.

- Skin complications are often present in 2ry varicose veins and are extremely rare in 1ry varicose veins.
- These are vein complications and skin complications:
 - Vein complications :
 - Superficial thrombophlebitis.
 - Haemorrhage.
 - Calcification of thrombosed veins (phlebolith).
 - Skin complications:
 - Pigmentation.
 - Dermatitis&eczema.
 - Ulceration (venous ulcer)
 - Malignancy
 - Talipes equines

Q. what is meant by talipes equines?

A. كتاب العظم

Q. Where is the commonest site for these skin complications &why?

A.

- Skin complications occur most commonly in lower 1/3 of the leg above the medial malleolus.
- This area called Gaitre's area.
- The complications commonly occurs in this area Because it is very rich in perforator veins which drain the skin directly to the deep veins of the leg (medial ankle perforators) and it is the most dependant part.

Q. What is the pathogenesis of these skin complications?

A.

- Incompetence of the medial ankle perforators → venous hypertension in the superficial veins above the medial malleolus → rupture of some venules →
 - 1) Extravasation of haemosedrin granules → Pigmentation and irritation which leads to dermatitis;
 - 2) Extravasation of fibrinogen → converted to fibrin → fibrosis → tissue anoxia and decreased vitality → ulceration after minor trauma.
 - 3) Due to □ venous pressure → capillary dilatation → RBCs get out in the S.C fat
→ phagocytosed → hemosedrin in SC tissue → pigmentation & irritation
→ eczema.

Q. How can you diagnose venous ulcer?

A.

- From its characters especially its site (Gaitre's area) and pigmentation at its margin.
- It may present without varicose vein in 50% of cases.

Q. What are the complications of venous ulcer?

A.

- 1- Infectin.
- 2- Hemorrhage.
- 3- Marjoline ulcer (malignant transformation).
- 4- Periostitis & osteomyelitis.
- 5- Talipes equinus.

Q. What is the significance of pulsating varicose veins?

A.

These are varicosities secondary to arteriovenous fistula.

Q. What types of arteriovenous fistulas do you know?

A.

- I. Congenital: -
 1. Localized.
 2. Diffuse.
- This congenital type is characterized by Local gigantism (Klippel trenaury syndrome) and portwine stain.
- II. Acquired:-
 1. Traumatic (butcher's thigh).
 2. Artificial.

Q. What is the significance of a swelling in the femoral triangle in a case of V.V?

- A.
- This swelling may be:
- Saphina varix.
 - Arterio-venous aneurysm.
 - Lymphadenitis secondary to venous ulcer.
 - Iliofemoral DVT.
 - Any other swelling leading to 2ry varicose veins by compression of femoral v.

Q. what is saphina varix?

- A.
- It is a saccular dilatation of upper end of great saphenous vein opposite incompetent saphenofemoral valve. It is a bluish rounded or ovoid subcutaneous mass in upper part of femoral triangle, soft, cystic, compressible, with expansile impulse and thrill on cough.

Q. Comment on blow out?

- A.
- Definition: Dilated superficial vein in front of incompetent perforator.
 - Clinical picture:
 1. Presence of saccular varicosities at the anatomical sites of perforator veins.
 2. Presence of defects in the deep fascia at the anatomical sites of perforator veins.
 - Clinical tests:
 - a. Trendlenburg test.
 - b. Multiple tourniquet test.
 - c. Manual localization of blow outs.
 - Investigations: Venography, Doppler ultrasound and Duplex scanning.

Q. What is the significance of the vein crossing the shin of tibia in case of varicose veins?

- A.
- This vein represents a communication between the long and short saphenous veins.
 - Since it lies over the shin of tibia, it is liable to trauma leading to its rupture which may lead to severe hemorrhage.

Q. How can you detect incompetent valves?

- A.
- By Schwartz's test in which varicose veins are percussed by index finger of one hand and palpated distally by-fingers of other hand.
 - If the valves of the superficial veins are incompetent, a wave is transmitted distally.

Q. How can you detect patent deep system?

A.

- By doing the modified Perthes' test (Describe)

Q. What investigations do you ask for in this case & what are the values of these investigations?

A.

- Doppler ultrasound and Duplex scanning, Venography.
- The values of these investigations:
 1. They demonstrate if the deep system is patent or occluded.
 2. They demonstrate the presence of incompetent perforators.
 3. They differentiate between 1ry and 2ry varicose veins.

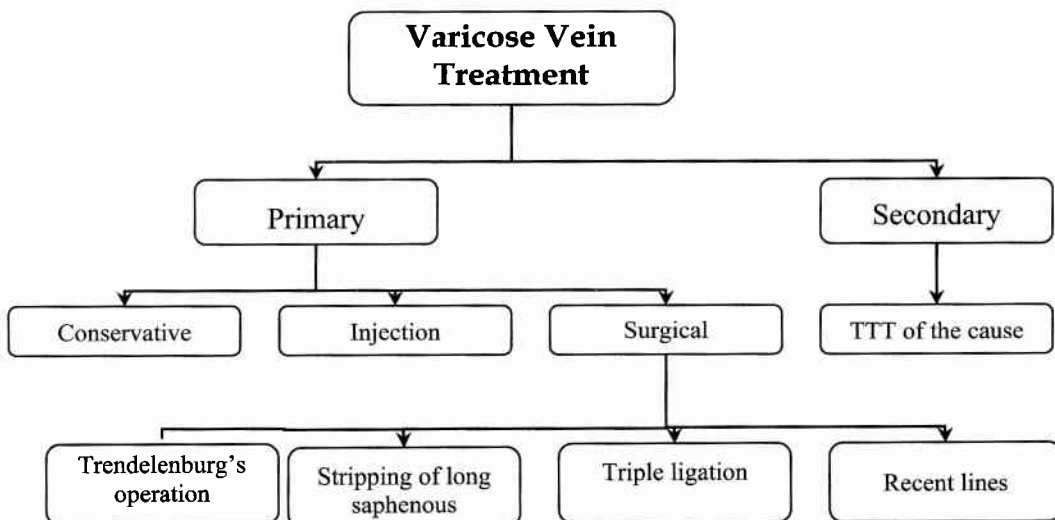
Q. How venography is done & how can differentiate between 1ry and 2ry varicose veins?

A. (obsolete nowadays)

- A tourniquet is applied around the ankle to occlude the superficial veins and the contrast medium (hypaque) is injected into one of the veins on the dorsum of the foot.
- Descending venography and transosseous venography are other routes for venography.
- It differentiates between 1ry and 2ry varicose veins as follow:
 - In 1ry V. V:
Deep veins appear patent, wide, with dilatations opposite their valves.
 - In 2ry V. V:
 - a) Before canalization, deep veins are occluded and not seen but there are tortuous irregular collaterals.
 - b) After canalization, deep veins appear as thin lines with no evidence of valves.

Q. What are the different lines of treatment of varicose veins?

A.



Q. Comment on conservative treatment?

A.

- The indications of conservative treatment:
 1. Mild cases & early uncomplicated cases.
 2. Cases refusing surgery or unfit for surgery.
 3. Cases with occluded deep veins (2ry V.Vs).
 4. Preoperatively and postoperatively in cases doing surgery.
- Methods:
 1. Reassurance.
 2. Removal of any predisposing factors (Avoid prolonged standing or sitting).
 3. Below knee or above knee elastic stocking.
 4. Leg elevation during sleep.
 5. Drugs: veno-tonics that support the vein wall e.g. Daflon, vitamins & antioxidants.

Q. Comment on injection sclerotherapy?

A.

- It is indicated in:
 1. Mild varicosities cosmetically distressing the patient.
 2. Residual varicosities after operation.
- The principle

Occlusion of the vein by fibrosis not by thrombosis. The sclerosant material is injected into the empty vein so that the wall adheres to wall without an intervening clot or thrombosis which will certainly recanalise.
- The materials used:
 1. Ethanolamine oleate 5%.
 2. Sodium tetradecyl sulphate 3%.
 3. Sodium morrhuate 5%.
- The complications
 1. Syncope due to drug sensitivity.
 2. Extravasation leading to sloughing & necrosis of the overlying skin.
 3. DVT (may occur if large amount of sclerosant material reaches the deep system undiluted).
- The contraindications:
 - 1- Septic thrombophlebitis, Secondary V.V.
 - 2- Avoid injection of long Saphenous itself.

Q. How to avoid complications of injection sclerotherapy?

A.

These complications can be avoided by:

1. Injection should be strictly intravenous.
2. The vein should be empty.
3. The maximal amount to be injected is 1 ml per setting.
4. Ladies on contraceptive pills are discarded (more liable to get DVT).
5. Ask the patient to walk after the procedure to dilute the material.

Q. What are the indications & the contraindications for surgery in varicose veins?

A.

▪ **The indications:**

1. Presence of complications.
2. Large trivascular VVs.
3. Incompetent saphenofemoral junction & Incompetent perforators.

▪ **The contraindications:**

1. Thrombophlebitis for three months after cure.
2. Secondary varicose veins after DVT.
3. Pregnancy:
During pregnancy, conservative treatment is done. After delivery, the varicosities usually disappear. Residual varicosities can be treated by continuation of conservative measures or by injection sclerotherapy if they cosmetically distress the patient
4. Pelvic tumors.

Q. What are the types of operations to be done in varicose veins?

A.

It depends on the case:

I- **Great saphenous system affection:**

- Large varicosity of the great saphenous vein → stripping of the great saphenous vein.
- Mild varicosity of the great saphenous vein + Incompetent saphenofemoral junction → Trendelenburg operation in which the following veins are ligated: Superficial external pudendal vein, superficial circumflex iliac vein, superficial epigastric vein, anterolateral vein of the thigh and posteromedial vein of the thigh.
- Mild varicosity of the great saphenous vein + Incompetent other perforator (Blowouts) → Subfascial ligation of the perforators (triple ligation).

II- **Short saphenous system affection:**

- Large varicosity of the short saphenous vein → stripping of the short saphenous vein.
- Mild varicosity of the short saphenous vein + Incompetent perforators (Blowouts) → Subfascial ligation.

III- **Varicosities outside the course of long or short saphenous veins:**

Large varicosity → subcutaneous stripping or punch excision.

Q. What is flat foot and how can you examine it?

A.

- Flat foot is loss of arch of the foot.
- Types:
 - i. **Mesenchymal:** due to weak mesenchyme.
 - ii. **Paralytic:** due to paralysis of muscles acting on the foot.
 - iii. **Ossous:** due to dislocation of the foot bones.

N.B. Newborn and young infants have flat foot due to undeveloped muscle tone and movement.

- Examine the patient while standing and comment on the arches, the state of the muscles of the legs and foot, the gait and any stiffness of the joint related to foot.
- Confirm your diagnosis by doing foot print.

Q. What is hallux valgus?

A.

Hallux valgus is lateral deviation of the axis of big toe due to subluxation of 1st metatarsophalangeal joint secondary to weak mesenchyme. It complicates by development of adventitious bursa which if inflamed it will be termed "Bunion".

Browse's introduction to the symptoms & signs of surgical disease/ Ch7 the veins/P198-206

Case 2. SECONDARY VARICOSE VEINS

Q. What is your diagnosis?

A.

2ry varicose veins of the left (right) leg.

Q. How you reach this diagnosis?

A.

- From History;

A. There is a past history suggestive of deep vein thrombosis after prolonged recumbence.

B.

- **Pain:** is markedcompared to the mild pain that occurs in 1ry varicose veins.
- **Swelling:** Persistent diffuse leg oedema that is not relieved by night sleepcompared to Evening ankle oedema which resolves after night sleep in 1ry varicose veins.
- **Disturbance of function:** Skin complications are often present in 2ry varicose veins and are extremely rare in 1ry varicose veins.

- From General Examination;

1. There are no signs suggestive of generalized elastic tissue deficiency e.g. kyphosis, visceroptosis, flat foot, varicocoele, piles, hernia, etc.
2. Water hammer pulse, heart failure (A-V fistule).
3. Scar of injury, bullet or stab wound in upper thigh may be present (A-V fistula).
4. Organomegaly or pelvic mass may be present.

- From Local Examination;

- **Distribution**
 - Usually unilateral
 - May cross the groin
 - Affects any vein or venule
- **Pattern**
 - Mainly serpentine and spider
- **Edema**
 - Marked diffuse leg oedema
- **Skin complications**
 - Often present

Q. What is venous Claudication?

A.

- After DVT, with recanalization of iliofemoral vein during walking arterial inflow exceeds the capacity of venous outflow, and because pain is associated with exercise and relieved by rest so it is called claudication.

N.B. The rest of questions & answers are similar to those of 1ry varicose veins.

- 10 -

ABDOMEN SHEET

Abdomen Case Sheet

History

Personal H:

Name, Age, Sex, Marital status, special habits of medical importance
Address, Residence, Occupation, & if ♀ → menstrual history.

- Calcular obstructive Jaundice: Middle aged females.

- Malignant obstructive jaundice: old males.

- Cirrhosis: usually in adults.

- Special habits → Alcoholism in cirrhosis.

- Residence →

- Occupation → Farmer.

- Menstrual irregularity → in liver cell failure

- Contraceptive pills → may cause

1. Cirrhosis

2. Portal vein thrombosis

3. Budd-Chiari syndrome

Complaint:

Duration + بلفظ المريض إيه اللي جابك المستشفى

HPI:

آخر مرة كنت

سليم امتي

1. Pain:

Site, Character, Radiation, relation to meals, What increase or decrease, Onset, Course, Duration, Periodicity, and What associates.

a) Site

- GU → Middle line in the epigastrium.

- DU → to the right of the middle line in epigastrium.

- GB → right hypochondrium.

- Appendix → around the umbilicus.

- Colon → right & left iliac fossa & below the umbilicus.

b) Character.

- Obstruction (bowel or ureter) → colicky pain.

- Large abdominal swellings e.g. spleen → dragging pain.

- Burning → reflux or PU.

- Stapping → PU.

- Stitching → Perisplenitis.

c) Radiation

- GB → inferior angle of right scapula.

- Pancreas → back.

- Ureteric colic → external genitalia & upper part of the thigh.

d) Relation to meals

- GB → Fatty meals → ↑ pain.
- GU → pain after meal by ½ hr.
- DU → pain after meal by 2 hr.

e) What increase

- GU → food.
- GB → fatty meals.
- Acute inflammation → any local or general disturbance.

f) What decrease

- DU → food & alkalis.
- GU → vomiting.

g) Periodicity

- DU → attacks for 2-6 Wk & free interval of 2-6 Ms.

2. Swelling

a) Site.

b) Size → (lemon size, orange size ...)

c) Onset *ابتداء ازاي*

- Accidental - Gradual
- Acute

d) Course:

- Progressive - Stationary - Regressive. - Fluctuating

3. Disturbance of function:

▪ **3 esophagus:**

- Dysphagia.
- Water brash.
- Heart burn.

▪ **3 stomach:**

- Appetite. *شهيتك علي الاكل اتغيرت*
- Weight.
- Vomiting.

▪ **3 small intestine:**

- Diarrhea.
- constipation
- Audible intestinal sounds.

▪ **3 Large intestine:**

- Distension.
- Dysentery.
- Bleeding. (Hamatemesis-melena-bl per rectum)

▪ **3 liver:**

- Jaundice.
- Bleeding tendency.
- Discoloration

▪ **1 pancreas**

- Steatorrhea

1. Dysphagia (Difficulty in swallowing)

هل هناك صعوبة في البلع ؟ للسوائل أو للأكل؟

- To solids or to fluids:
 - Solids: mechanical obstruction (cancer – stricture)
 - Fluids: functional obstruction (achalasia – bulbar palsy)
- Onset: بدأت امتي؟؟
 - Acute: in inflammation.
 - Gradual: in cancer.
- Course: بتزيد ولا لا ؟
 - Progressive in carcinoma.
 - Intermittent in achalasia.
 - Stationary in stricture.
- Duration: من قد ايه؟
 - Short duration: in carcinoma.
 - Long duration: in achalasia.

2. Water brash:

- Sudden filling of mouth with alkaline secretion due to regurgitation of saliva collected in the esophagus.

بتحس باللعاب مائي فمك ونفسك غمه عليك

3. Heart burn:

هل هناك حمو علي قم المعدة ؟

4. Appetite:

شهيتك علي الاكل اتغيرت

- DU → good for every thing.
- GU → good but the pt is afraid to eat (sitophobia).
- Carcinoma of stomach → pt dislikes meat.
- GB diseases → pt afraid of fatty meals.
- Polyphagia.
- Perverted appetite (Picca).

5. Weight: وزنك اتغير اليومين دول؟

6. Nausea: feeling of desire to vomit.

7. Vomiting: expulsion of stomach contents into the mouth:

- Spontaneous or induced.
- Preceded by nausea or not.
- Onset → immediately after meals e.g. GU
→ by the end of the day = pyloric stenosis
- Contents of vomitus:
 - Food.
 - Food of the previous day (pyloric stenosis).
 - Gastric juice (yellow). → Bile (green).
 - Foeculent = Intestinal obstruction
- Effect on pain → Relieves pain in GU
→ No relieve in pyloric stenosis.
- Frequency.

8. **Diarrhea:** يتبرز كام مرة في اليوم ودلوقت في تغير

- Stool consistency.
- Frequency, number of motions per day (first ask about patient's normal habit)

9. **Constipation:**

10. **Audible intestinal sounds:**

11. **Flatulence & distention:** بطنك انتفخت ؟

- Abdominal distension, which comes soon after meals.
- It is present in gall bladder & colonic dyspepsia

12. **Dysentery** → **Passage of mucus & blood**

with stools with TENESMUS. في نقل او

تعنية مع البراز

13. **Bleeding:**

a- **Bleeding per rectum:** هل هناك دم احمر مع التبر

Passage of fresh blood, the cause is usually in the hind gut, however severe bleeding anywhere in GIT from the nasal sinuses to the anal sinuses can present to us with bleeding per rectum.

b- **Melena:** هل هناك براز اسود زي الزيت

Passage of soft black tarry offensive stools due to upper GIT bleeding (from oropharynx to end of midgut)

c- **Hematemesis:** رجعت دم قبل كده

Vomiting of blood usually coffee ground due to formation of acid hematin or bright red in severe haematemesis

الدم مع الكحة ولا ترجيع مع الأكل ؟

الدم كميته كام كباية ؟

لما رحنت المستشفى عملوا لك نقل دم ولا لا ؟

14. **Jaundice:**

لون عينك بقي اصفر ولون البول والبراز اتغير

a) **Onset** → Acute : viral hepatitis, calcular obstruction

→ Gradual: malignant obstruction, cirrhosis

b) **Course** → Progressive: malignant obstruction, cirrhosis

→ regressive: viral hepatitis

→ Intermittent: calcular obstructive jaundice, periampullary carcinoma, hemolytic jaundice, chronic active hepatitis

c) **Duration** → Short: viral hepatitis

→ Long: cirrhosis

→ More than 2 years exclude malignancy

- d) **Urine** → Dark: hepatocellular & obstructive
→ Pale: hemolytic
- e) **Stool** → Pale clay: in obstructive.
→ Dark: in hemolytic
→ Slightly pale in hepatocellular
- f) **Anorexia, nausea, vomiting:**
→ Occur at the onset of viral hepatitis.
- g) **Fever** → Hepatocellular: pre-ictic phase of viral hepatitis
→ Hemolytic: during hemolytic crisis.
→ Obstructive: Charcot's triad.
- h) **Bleeding tendency: from skin, orifices in:**
a- **Obstructive jaundice**
b- **Liver cell failure**
- i) **Pain** → Hepatocellular: dull-aching pain in Rt. hypochondrium in case of viral hepatitis
→ Hemolytic: bone pain and abdominal pain in hemolytic crisis
→ Obstructive:
a- Biliary colic (Calcular obstruction)
b- Epigastric pain radiating to the back (malignant obstruction)
- j) **Pruritis:** in obstructive jaundice

15. **Steatorrhea** → bulky, offensive, floatin stools.

4- Other systems:

Urinary symptoms:

Genital symptoms:

5- History of investigations or medications

Past history:

- Similar attacks.
- Common diseases: (DM, Hypertension, TB, B, Hepatitis, DVT)
- History of malaria, typhoid
- Drug allergy & Drug intake e.g. Chlorpromazine → intrahepatic cholestasis
- Blood transfusion
- Previous Operations.

Family history:

- Consanguinity
- Similar condition in one of the members of the family: GIT diseases with F.H.
 - Congenital hypertrophic pyloric stenosis
 - Familial polyposis
 - Fibrocystic disease of pancreas

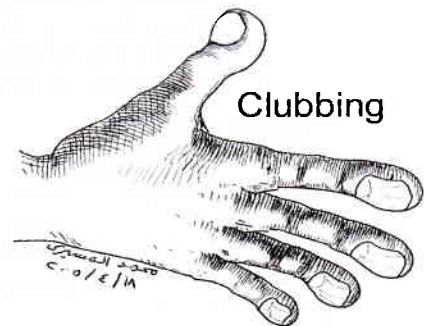
Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/P391

Examination

General:

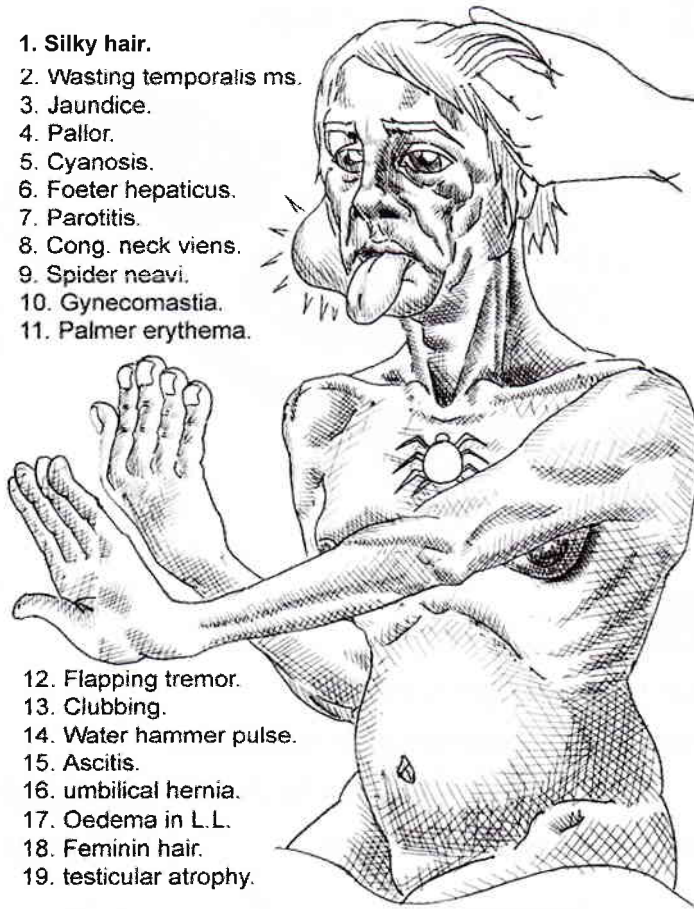
- **Body built** → Marked loss of weight in malignancies.
- **Decubitus** → orthopnea → in massive ascites.
- **Facial expressions.**
- **Blood pressure**
- **Pulse**
 - Water hammer pulse: in liver cell failure due to Vasodilator material & anemia.
 - Bradycardia → obstructive Jaundice.
- **Temperature** → Fever in:
 - Ascending cholangitis.
 - Pyelonephritis.
 - Viral hepatitis.
- **Complexion** → (3 colors)
 - (Jaundice, pallor & cyanosis)
 - Jaundice → hemolytic → lemon yellow
 - hepato-cellular → orange yellow
 - obstructive → olive yellow
- **Chest & heart** → spider naevi, Gynaecomastia
- **Extremities:**
 - Clubbing (What are abdominal causes of clubbing)
 - Primary biliary cirrhosis.
 - Polyposis.
 - Inflammatory bowel disease.
 - Hepatoma.
 - Malabsorption syndrome.
 - Palmar erythema.
 - Flapping tremors.
 - Scratching marks → due to itching in obst. Jaundice.
 - Edema in LL → hypoproteinemia in Chronic Liver diseases (CLD)
 - Skin rash → bleeding tendency.
 - Purpuric rash.
 - Pellagic rash.
- **Head & Neck:**
 - Congested neck veins in:
 - Hyperdynamic circulation in L.C.F.
 - Massive ascites.
 - Bilharzial cor-pulmonale.
 - Wasting in temporalis → in CLD.
 - Enlarged parotid → endemic parotitis in CLD
 - Enlarged LN in lymphomas.

Pt. is alert, conscious, oriented to time, place, & persons, average built, quiet facial expression, normal decubitus, average intelligence, & s/he is cooperative.

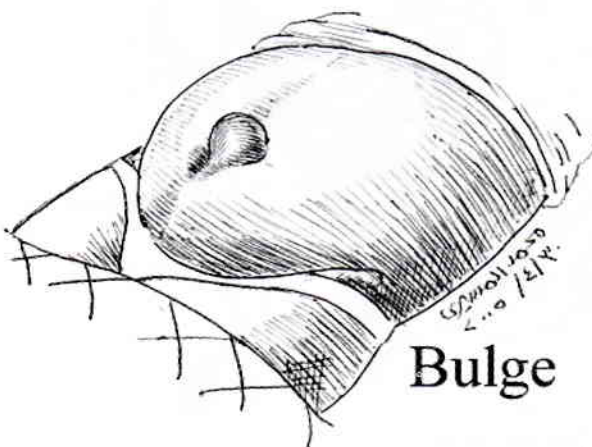


- **Manifestations of liver cell failure (L.C.F.)**
- **Manifestations of hypopvitaminosis**

1. Silky hair.
2. Wasting temporalis ms.
3. Jaundice.
4. Pallor.
5. Cyanosis.
6. Foeter hepaticus.
7. Parotitis.
8. Cong. neck viens.
9. Spider neavi.
10. Gynecomastia.
11. Palmer erythema.



12. Flapping tremor.
13. Clubbing.
14. Water hammer pulse.
15. Ascitis.
16. umbilical hernia.
17. Oedema in L.L.
18. Feminin hair.
19. testicular atrophy.



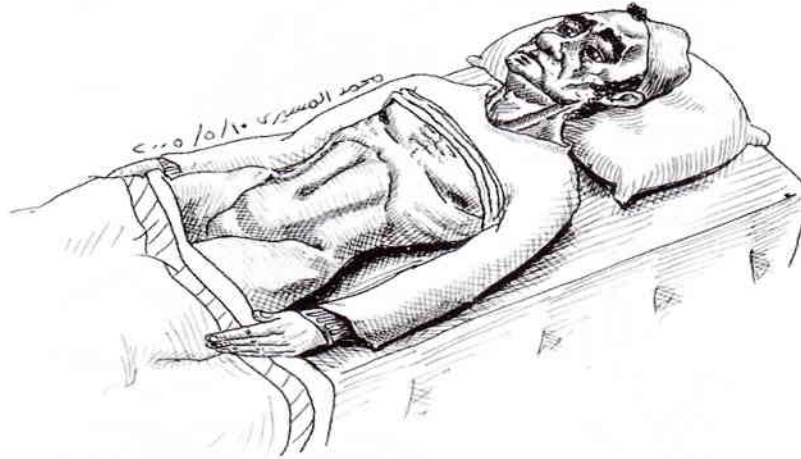
Bulge



L.L oedema

Local: سلم على العيان و قف على يمينه

Exposure → from nipple till mid thigh.

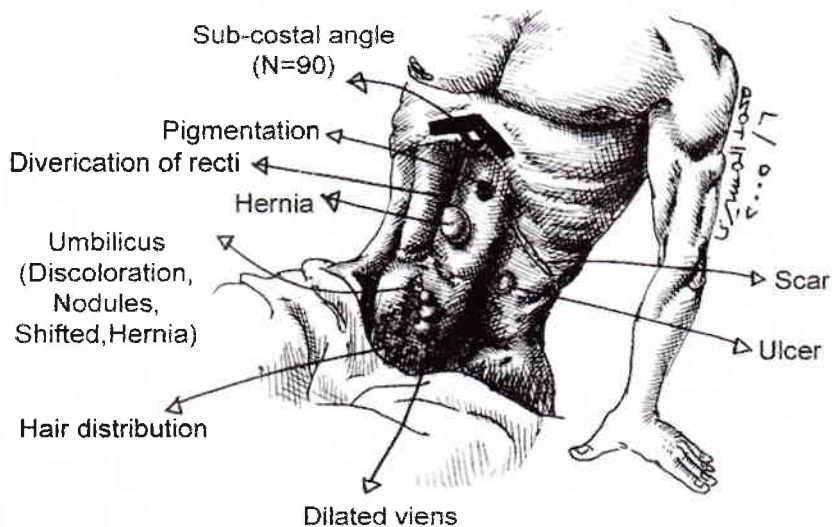


Inspection

- Inspection from 3 different planes.
- To see mobility of abdomen with respiration.

خد نفس بالراحة و تطلعه بالراحة مع ثنى ركب العيان

- For expansile impulse with cough. كح على الشمال



Things to be seen by inspection

1- Abdominal contour:

- Normal abdominal contour:
 - Gently convex from side to side & from above downwards
→ في كل حالات الجراحة
- If there is bulge: علق عليه
 - Localized bulge :
(Site, size, shape, number, movement with respiration, intra, or extra abdominal by asking the patient to rise up without support)
 - Generalized bulge:
 - Fluid → Ascites → symmetrical diffuse + full flanks
 - Fat → obesity → symmetrical diffuse + NO full flanks
 - Flatus → distension → symmetrical diffuse + NO full flanks
 - Fibroid or large abdominal tumor
 - Fetus → pregnancy
- Retraction → T.B peritonitis (dry type).



Retracted abdomen

2. Movement with respiration:

1. Normal: freely mobile
2. Decreased or absent: in
 - A. Rigidity: due to peritonitis
 - B. Diaphragmatic paralysis
 - C. Abdominal distension with Ascites

3. Visible intestinal movements: (Peristalsis)

- Pyloric obstruction: from left to right in epigastrium
- Small intestinal obstruction (step ladder)
- Colonic obstruction (horse-shoe crossing the midline from Rt. to Lt.)

4. Epigastric pulsations:

- Aortic aneurysm, Rt. Ventricular enlargement, pulsating liver.

5. Subcostal angle

- Normal 70-90 °
- ↑ in upper abdominal swellings.

6. Divarcation of recti:

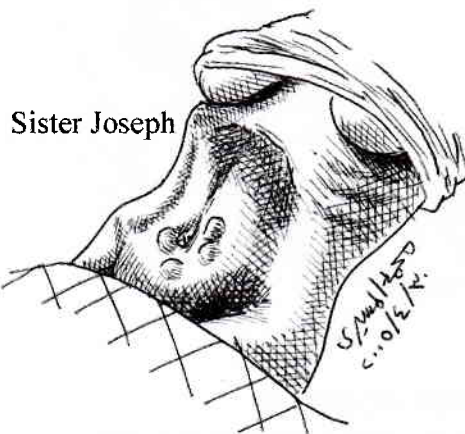
- Ask the patient to rise up without support → separation of two recti forming a gap which you can put the tip of finger easily: it is due to chronic increase of intrabdominal pressure

7. Umbilicus:

3

مع
بعض

- **Position:** → normal → midway between symphysis pubis & xiphi-sternum
- **Shape:**
 - Inverted (normal),
 - Everted (chronic ↑ in intra-abdominal pr.) = umbilical hernia.
 - Deep → obesity.
- **Nodule** → sister Joseph.

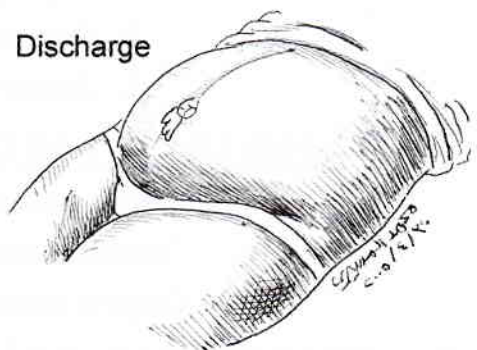


▪ Discharge:

3

مع
بعض

- urine → from patent urachus.
- stool → from patent vetello-intestinal duct.
- pus → from pilonidal sinus.



8. Hernial orifices:

- (Epigastric, paraumbilical, inguinal, femoral, incisional)

9. Skin:

- Scar → (operation, cautery)
- Stria → (Ascites, pregnancy, obesity, Cushing \$)
- Scratch marks → (obstructive jaundice)
- Pigmentation → (Cullen sign, Grey Turner sign)
- Petechie, ecchymosis
- Hair distribution: feminine (apex down) → CLD

10. Dilated veins:

	Caput medusa	IVC obstruction
Site	Around the umbilicus	Mainly at flanks
Presence on back	-ve	+ve
Crossing the groin	-ve	+ve
By milking: Direction of blood	Away from the umbilicus	From below upwards
Thrill	+ve	-ve
Venous hum	Kenaway sign	-ve

11. External genitalia

Palpation

دفي ايدك ، اثنى رجل العيان، احس ٩ مناطق

A. Superficial

أيد دافئة على البطن + عيني على وش العيان

To detect tenderness.

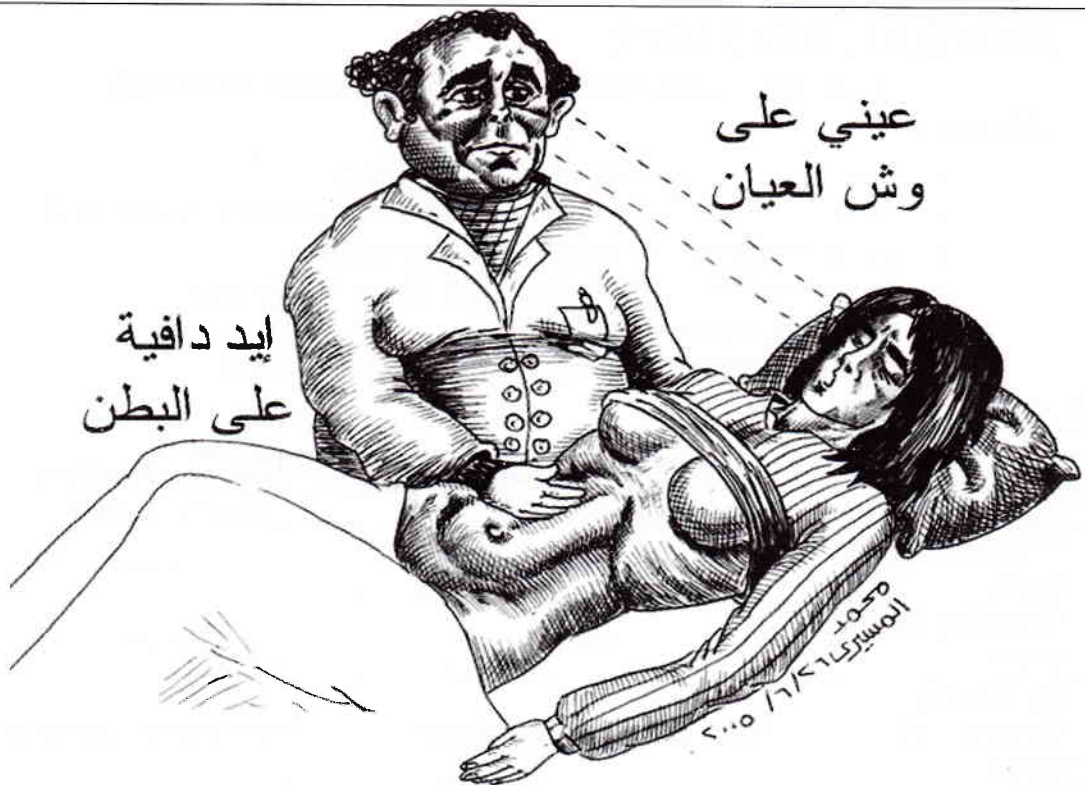
To palpate superficial mass.

To get confidence of the patient

To detect rigidity and guarding.

To detect hyperesthesia (Boas' sign in acute cholecystitis, triangle of Sheren in acute appendicitis)

	Rigidity	Guarding
Definition	Reflex spasm of abdominal muscles	Voluntary contraction of abdominal muscles on attempting to palpate over a tender area
During expiration	Does not disappear	Disappear
Site	According to the cause	Usually bilateral



B. Deep

1. Liver:

A-

1. Rt lobe of Liver → from Rt iliac fossa

قول للعيان نفس عميق وطلعه ، اطلع لفوق بجانب ايدك على مراحل ، في كل مرحله ياخذ نفس ويطلعه

if enlarged → ptosed or Enlarged

Diff By → heavy percussion in mid clavicular line

2. Lt lobe → From mid line

If Lt. lobe firm & Rt lobe isn't feltliver is shrunken

When liver is enlarged we have to comment on:

Edge: sharp & well defined

Surface: Smooth, nodular, or granular

Consistency : firm

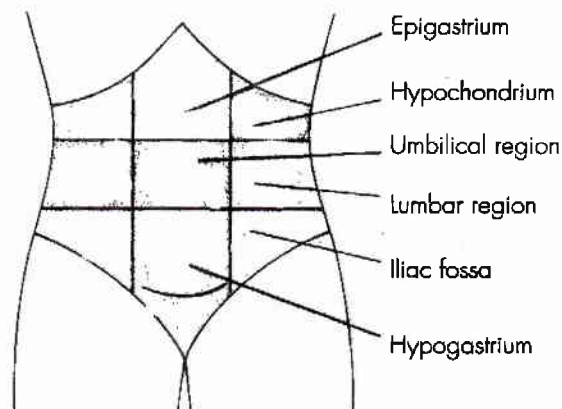
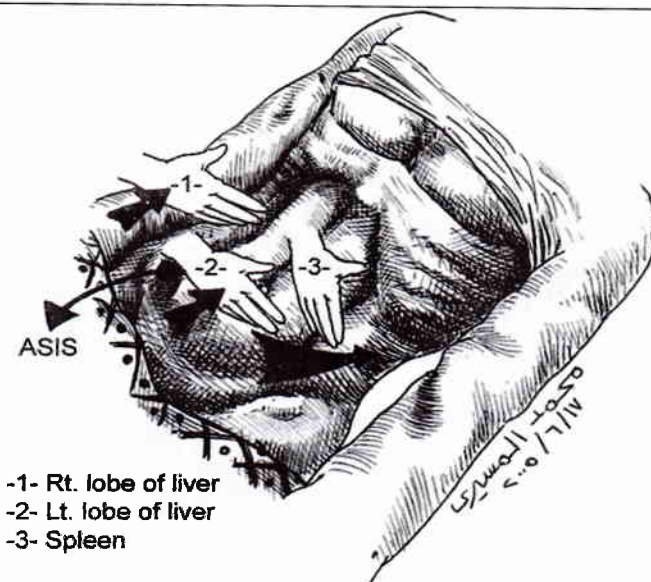
Cm below costal margin: (....) cm

B- Bimanual method:

- By putting the left hand under the lower ribs and lifting them forward.

C- Dipping method:

- In tense Ascites, fingers tips are pressed with a quick stabbing motion into the abdomen, a tapping sensation is felt by the organ due to displacement by fluid.



The names of the regions of the abdomen

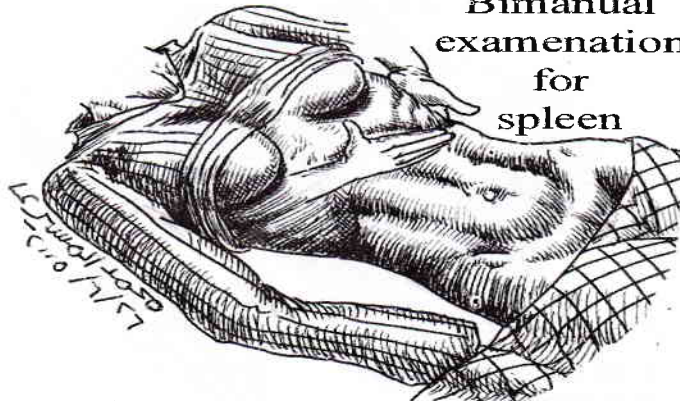
2. Spleen: → 1 X 3 X 5 X 9 X 11

- Start from Rt. Iliac fossa due to presence of Phernico-colic Lig (from diaphragm to colon and prevent downward enlargement of the spleen).
- When spleen enlarged towards lt iliac fossa? → If the lig was torn by pervious operation or malignancy
- Then comment on:
 - **Edge**
 - **Surface**
 - **Size** → normal 1X3X5 ابعاده بالبوصه
9, 11 ضلوعه
Spleen has to be 3 times its size to be palpated
 - **Notch** → The site of fusion of spleenules.
Loss of notch → malignancy (Hodgkin's)

▪ **If I can't palpate it:**

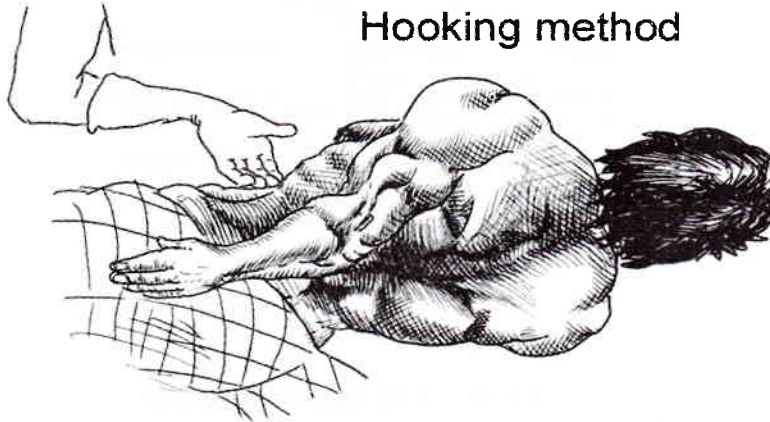
- ايدى الشمال تحت جنبه الشمال وزق لفوق وحس

**Bimanual
examination
for
spleen**



- لو ما عرفتش تحسه -- نيم العيان على الجنب اليمين ، ثم افق على الجنب الشمال ، ثم حط ايدك تحت costal margin خلى العيان يتنفس بعمق ثم حسه

Hooking method



- If still not palpated: Do percussion on (Traub's area).
- If there is ascites → dipping method.

▪ **What is Traub's area?**

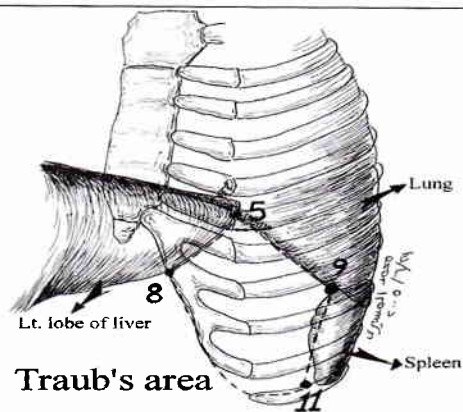
It is area of tympanetic note overlying the fundus of the stomach

Boundaries:

- Upper border: lower border of Lt. lung (5th rib in MCL → 9th rib in MAL)
- Lower border: Lt. costal margin (Lt. 8th rib in P.S.L → 11th rib in MAL)
- Left border: Anterior margin of spleen (9th, 10th, 11th ribs in MAL)
- Right border: Left border of left lobe of liver (5th rib in MCL → 8th in PSL)

Dullness over Traub's area:

- Full stomach or fundal tumor.
- From above: consolidation, pleural effusion.
- From Left: enlarged spleen.
- From right: enlarged left lobe of liver.
- From below: (abdominal condition e.g. Ascites, abscess...).



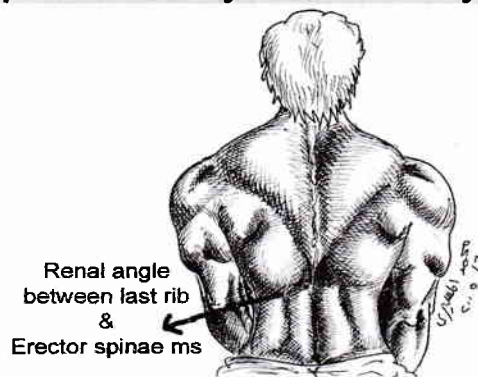
3. Kidney:

Renal angle → sacrospinalis, Last rib.

If there is kidney swelling → post ballotment

تخبطها من تحت.....هتزق ايدك اللي فوق وتنزل تاني

Rt lobe of liver, Spleen & Kidneys can be felt by bimanual method



Palpation of renal angle

N.B. Examples of acute urine retention:

i. **Postoperative retention of urine:**

- a. Following anorectal, genital or perineal operations (e.g. after delivery and haemorrhoidectomy). It is due to reflex penorectal spasm secondary to pain or as a condition reflex.

- Treatment: (never rush to catheterization)

→ If you had ensured that the patient took the proper sedation think about changing the condition around him by letting him to go to the WC with assistance and then allowing him to hear the sound of running tap-water (over 90% of patients will get relieved by this simple way.

→ If this failed try with hot foment on suprapubic region.

→ If failed give prostagmine or dorryl to stimulate bladder contraction provided that you should eliminate any possibility for bladder neck obstruction.

→ After that the last resort will be confined to bladder catheterization.

b. Old-aged male patients with history of prostatism are liable to get retention of urine either spontaneously or after any operation. In the latter the predisposing factors are mechanical obstruction and recumbency leading to pelvic congestion, preanaesthetic medications will increase the hypotonia together with postoperative reflex polyuria.

- Treatment:

→ Try catheterization 1st if failed do suprapubic cystostomy.

c. Acute retention following circumcision:

- Early: during the 1st day, it is due to reflex spasm from the pain. Give analgesic and antihistaminic, if not relieved resort to catheterization.

- Late: on the 5th day, it is usually 2ry to local infection.

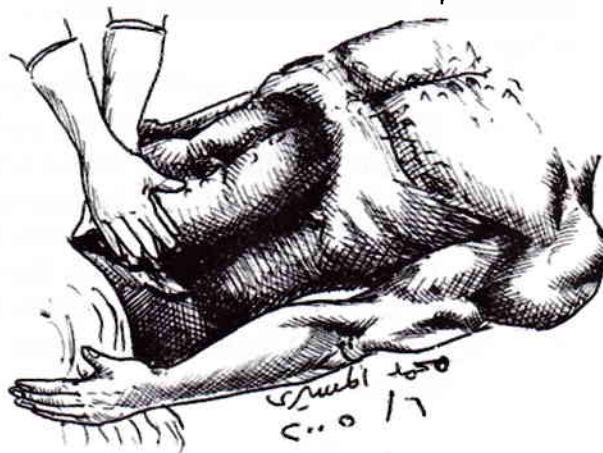
→ Treatment: local wash and removal of the dried crust by any watery antiseptic lotion as savlon together with systemic antibiotics and analgesic. If not relieved do suprapubic cystostomy but never catheterization.

4. Pelvic colon:

Rolling in left iliac fossa ايدى الاتنين فوق بعض واعمل

If I feel something like cordmay be:

- Bilharzioma. - Spastic colon.



5. Gall bladder:

هاحس Lateral border of Rectus abdominis muscle → (linea semilunaris)

إلى أن أصل إلى التقاطع مع الضلع

اضغط بال **Thumb** او بباقي الأصابع وقله خذ نفس مع النظر فى وش العيان

Murphy's sign:

- Ask the patient to take deep breath while exerting pressure on surface anatomy of gall G.B (junction between Rt. Costal margin & linea semilunaris) → sudden catch in breath with a gasp (i.e. chronic cholecystitis)

6. Draining Lymph nodes → Virchow's LN & paraaortic.

7. Urinary bladder.

8. External genitalia:

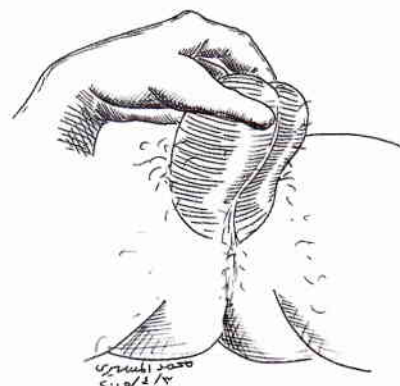
In surgical practice this is usually confined to examination of the male genitalia, since females with disorders of this region are managed by gynaecologists. The examination is best performed with the patient in the supine position.

▪ Spermatic cord

- Beaded = B or T.B
- Matted= filarasis

▪ Scrotum

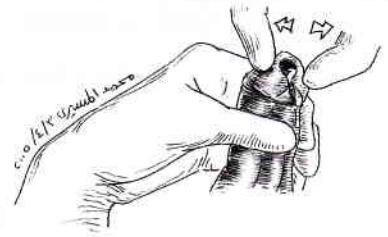
- *Scrotum* (ant, post aspect) Shape, symmetry and swelling
- In all cases both sides of the scrotum should be palpated
- Back of the scrotum for T.B sinus
- Starting with the healthy side, first with the patient standing & then in the recumbent position
- Palpation of the epididymis (size, consistency, presence of sulcus, between it and the testis)
- tunica vaginalis (early hydrocele detected by pinching test. i.e. you feel double layers)



▪ Testis

- Size
- Consistency
- Testicular sensation

- **Penis** → for ulcer or scar of chancre
 - Penis esp. external meatus (site, discharge by pressing the glans)
 - Perineum



- **Other hernial orifices**

9. **Back** → Pott's disease or psoas abscess.

Percussion: → normally abdomen is resonant in percussion

- **Solid organs:** → parallel to the organ
- **Swelling:** → from resonant to dull
- **Ascitis:**

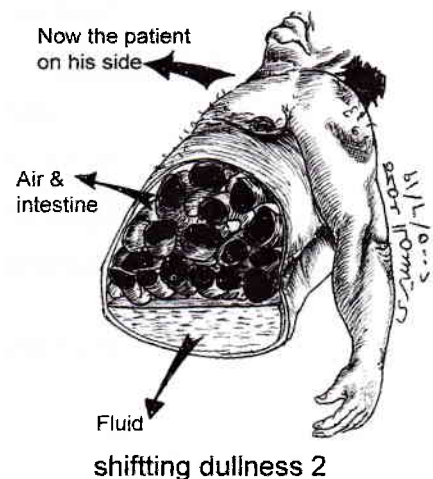
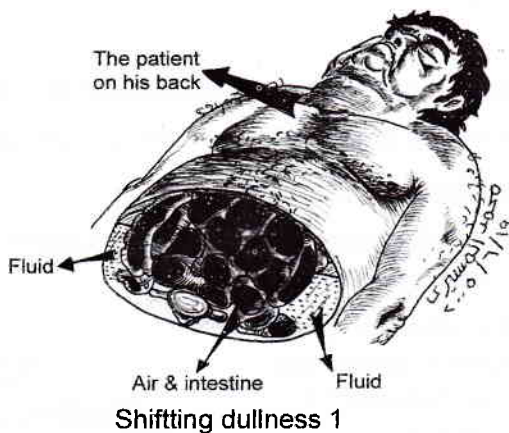
Ascitic fluid less than 500 cc cannot be detected clinically:

- Minimal Ascites (500-1000cc)
- Moderated Ascites (1000-2000cc)
- Severe Ascitis (>2000 cc)

→ Moderate amount: Shifting dullness

→ Tense: transmitted thrill

→ Minimal: knee – elbow



Auscultation:

- Intestinal sounds → intestinal obstruction → loud, sharp, frequent
→ paralytic ileus → dead silent
- If there is Portal hypertension → Venous hum on epigastrium ↑ with respiration → It is called (Kenaway sign) د/قناوی
- If there is (Hepatoma): → (Ma'mon sign د/مأمون)
- If there is aneurysm → Murmur

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/P388

P/R:

How to make it ?

1- Examination of the abdomen is incomplete without a rectal examination. For this purpose, the patient is most commonly positioned in the left lateral decubitus position, although some prefer the knee-chest position.

2- Oral consent

١. علشان أقف انا على يمين العيان

٢. العيان ياخذ رجله عليه

٣. لو ملقتش حاجه بعينك ، ابعد وشك وخليه يحزق

٤. ازاي هتدخل ايدك؟

▪ زى ما تكون بتخبط على الباب بس فى ال PR بالـ Index بس

وبعد كده تدخل ال Index

Inspection

- The examination starts with inspection of the perineum for external skin tags, perianal inflammation, sinuses, fissures, medial to the ischial tuberosity (base of the ischiorectal fossa).

Digital examination

- Digital examination of the rectum is performed in both the elective situation and patients with an acute abdomen.
- The actual rectal examination is carried out with a lubricated gloved hand.
- The tip of the index finger is placed inside the anal canal and directed initially towards the umbilicus before turning posteriorly towards the sacral concavity.

Examples of some finding of rectal examination:

=====

1. Deep rectal tenderness is encountered in acute appendicitis, salpingitis and peritonitis.
2. A ballooned empty rectum may be found in patients with small-bowel obstruction
3. Patients with large-bowel obstruction due to severe constipation, a mass of impacted faeces is encountered.

In the elective situation, the rectal walls (anterior, lateral and posterior) are first felt for mucosal lesions (polypoidal growths, ulcers, etc.).

In males:

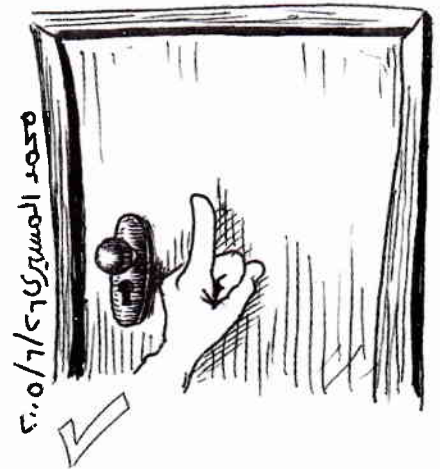
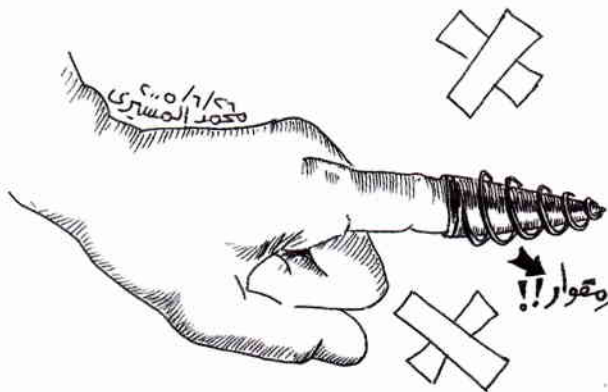
- The prostate gland is examined through the anterior wall. Normally, it should be possible to move the rectal wall over the prostate gland. The median sulcus between the two lobes of the prostate gland is also palpable. In benign disease the prostate may be enlarged or fibrotic, whereas in cancer of the prostate the gland feels craggy with loss of the normal outline and infiltration of the anterior rectal wall. No other structure should be palpable through the rectal walls.

In females:

Ovaries and tubes are felt laterally only when enlarged and pathological. Tumour deposits in the pelvic peritoneum may be felt as a hard shelf anteriorly. When the digital examination is complete, the glove is inspected for the presence of blood and a Haemocult test performed before the glove is discarded

- **Organs palpable by PR:**

- In both male and female: coccyx, sacrum, ischial spine and anorectal ring.
- In male: prostate.
- In female: cervix, pirineal body and ovaries.

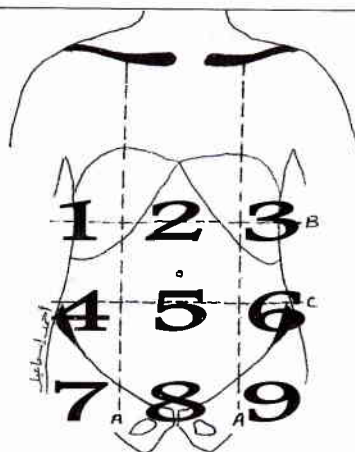


Browse's introduction to the symptoms & signs of surgical disease/ Ch17 the rectum & anal canal/ P449

ANATOMICAL POINTS OF CLINICAL IMPORTANCE

- **Planes of the abdomen:**

- The abdominal cavity is divided into 9 regions by 2 horizontal planes and 2 vertical planes:
 1. **Rt. & Lt. lateral planes:**
 - From mid inguinal point (below) to midclavicular point (above)
 2. **Transpyloric plane:**
 - Upper horizontal plane at the level of L1 vertebra.
 3. **Supracrestal line:**
 - Lower horizontal plane at level of A.S.I.S.



<u>1- Rt. Hypochondrium</u> Liver, G.B, Rt. Kidney and suprarenal gland, Rt. Colic flexure	<u>2- Epigastrium</u> Stomach, duodenum, pancreas (head & body), transverse colon, aorta	<u>3- Lt. Hypochondrium</u> Spleen, tail of pancreas, Lt. kidney & suprarenal gland, Lt. colic flexure
<u>4- Rt. Lumbar</u> Ascending colon, jejunum, Rt. Kidney (lower pole)	<u>5- Umbilical</u> Small intestine, omentum, retroperitoneal structure	<u>6- Lt. Lumbar</u> Descending colon, Lt. Kidney (lower pole) Jejunum & duodenum
<u>7- Rt. Iliac fossa</u> Coecum & appendix, Rt. Ureter, Rt. ovary	<u>8- Hypogastrium</u> Ileum, urinary bladder if distended Enlarged uterus	<u>9- Lt. Iliac fossa</u> Sigmoid colon, Lt. ureter, Lt. ovary

SURFACE ANATOMY OF LIVER

- **The upper border:** → represented by a line joining the following points:
 - 1- Apex of the heart.
 - 2- A point at the xiphisternum.
 - 3- 5th rib in right M.C.L.
 - 4- 7th rib in the right midaxillary line.
 - 5- 9th rib in right scapular line.
- **The lower border:** → is marked by a line joining the following points:
 - 1- A point on the Lt. 5th intercostal space at the Lt. lateral vertical plane.
 - 2- A point on the Lt. costal margin at the tip of the 8th costal cartilage.
 - 3- Mid way between xiphisternum and umbilicus.
 - 4- Tip of right 9th costal cartilage.
 - 5- Following the costal margin to the mid axillary line.
- **Right border:** → from 5th rib to 7th and 11th rib in midaxillary line

SURFACE ANATOMY OF SPLEEN

- To map out the spleen the tenth rib is taken as representing its long axis; vertically it is situated between the upper border of the ninth and the lower border of the eleventh ribs. The highest point is 4 cm. from the middle line of the back at the level of the tip of the ninth thoracic spinous process; the lowest point is in the midaxillary line at the level of the first lumbar spinous process.

SURFACE ANATOMY OF THE KIDNEY

- a- posterior surface markings of the kidney: → bounded by 4 lines (Morris's parallelogram)
 2 vertical lines: 3, 9 cm from median plane
 2 horizontal lines: at level of T11 and L3
- b- anterior surface marking of the kidney:

	Right kidney	Left kidney
Upper end	11 th space	11 th rib
Lower end	5 cm above iliac crest	6.5 cm above iliac crest

إذا اتسّلت ليه ال swelling ده بتاع (kidney or liver or spleen)

■ هناك ٣ أساسيين للكل

- 1- Intra abdominal
- 2- Move with respiration
- 3- Occupying anatomical site (...)

■ + هناك ٣ لكل واحد على حده

<u>Spleen</u>	<u>Liver</u>	<u>kidney</u>
4. Doesn't fill angle	4. Doesn't fill angle	4. Fill angle
5. Doesn't ballot	5. Doesn't ballot	5. Ballot
6. No band of resonance & there is Notch	6. No band or resonance	6. band of resonance in front of it

G.B mass has the following characters:

1. Intra abdominal mass.
2. Moves up & down with respiration.
3. Pyriform in shape.
4. Its surface is smooth & its edges are rounded & well defined except superiorly where it disappears beneath the Rt. costal margin.
5. It does not fill the renal angle & it does not ballot (not renal mass).
6. Dull on percussion Its dullness is continuous with the liver dullness.

Special investigations

- **Laboratory investigation:**

- CBC, Hb%, PT, PTT
- Blood sugar.
- LFT → Enzymes (transaminases, Alkaline phosphatase, γGT)
 - serum Albumin
 - Total & direct bilirubin.
- KFT → serum creatinine, BUN, S.urea.
- Blood electrolytes.
- Serological investigations for bilharzias, hydatid,.....
- Stool & urine analysis.
- Tumor markers: e.g. alpha feto-protein.

- **ECG**

- **Radiological investigations:**

- Abdomino-pelvic U/S.
- Plain X- ray (chest) (abdomen supine & erect).
- Barium (swallow, meal, follow through).
- CT scan, Spiral CT.
- MRI.
- Cholecystography.
- PTC.

- **Endoscopic investigation:**

- Upper GI endoscopy.
- Esophageal manometry.
- ERCP.
- Lower GI endoscopy.
- Sigmoidoscopy.

Provisional diagnosis

1. Etiological →.

2. Anatomical → It is diagnosis of the region (Skin, S.C, muscle, tendon, vessels, nerve) or organ (spleen, liver, gall bladder) which is affected.

3. Pathological → Congenital, traumatic, inflammatory, neoplastic ...etc.

4. Functional diagnosis → compensated or not

5. Complications → haematemesis, anemia,

6. Associated condition → DVT, T.B., diabetes, chronic bronchitis...etc.

Jaundice

Case: CALCULAR OBSTRUCTIVE JAUNDICE

Q. What is your diagnosis?

A.

- Calcular obstructive jaundice.

Q. How did you reach this diagnosis?

A.

- Jaundice:
 - Due to presence of yellowish discolouration of the tissues and body fluids (except the brain. CSF, tears, saliva and milk) due to excess of bilirubin in the blood.
- Obstructive:
 - Because there are the following manifestations:
 1. Jaundice is deep.
 2. Associated pruritus.
 3. Stools is pale.
 4. Urine is dark and frothy.
- Calcular:
 - By History
 - Age: Middle age
 - Sex: More in females
 - Onset: Acute
 - Course: Remissions & exacerbations
 - Duration: Variable
 - Pain: Usually present; Biliary colic
 - Pruritus: Usually present
 - Past history: Biliary dyspepsia and colic
 - By General Examination
 - Depth of jaundice: Moderate to deep yellow
 - Weight loss: Slight
 - Lower limb oedema: Absent
 - Lower Limb Phlebothrombosis: Absent
 - Abdominal Examination
 - Liver: Enlarged and smooth
 - Palpable gall bladder: Uncommon
 - Ascites: Absent

Q. Comment on bilirubin?

A.

- The normal level ranges from 0.2 to 0.7 mg%.
- If the bilirubin becomes > 3 mg % the jaundice will be manifested. If the bilirubin is > 1 mg% but less than 3 mg%, this is called subclinical or latent jaundice.
- There are two types of bilirubin:
 - Indirect bilirubin = unconjugated bilirubin = haemobilirubin
 - Direct bilirubin = conjugated bilirubin = cholebilirubin

	Indirect bilirubin	Direct bilirubin
Produced in	The spleen as a result of destruction of RBCs (hemolysis).	In the liver cells as a result of conjugation of unconjugated bilirubin with glucuronic acid
Obstructive jaundice		High because of the regurgitation of cholebilirubin from the bile canaliculi into the blood.
Haemolytic jaundice	High due to the increased production as a result of increased hemolysis.	
Hepatocellular jaundice	High as the diseased liver cells are unable to conjugate the unconjugated bilirubin, so it becomes elevated in the blood.	High as The obstructed intrahepatic bile canaliculi result in regurgitation of conjugated bilirubin into the blood.
Passage into the urine	Doesn't pass as it is not water-soluble and is carried in the blood bound to albumin and this binding makes the molecule large to be filtered in the glomeruli.	Passes because it is water-soluble.

Q. What is the most important differential diagnosis of obstructive jaundice?

A.

- Calcular and malignant obstructive jaundice.

Q. What are the characteristic features of malignant O.J. differentiating it from calcular O.J.?

A.

- History
 - Age: Usually old
 - Sex: more in males
 - Onset Gradual
 - Course Steadily progressive
 - Duration Not more than 2 years
 - Pain May be present; epigastric pain radiating to the back
 - Pruritus Severe
 - Past history Negative
- General Examination:
 - Depth of jaundice: Deep olive green
 - Weight loss: Progressive
 - Lower limb oedema: May be due to:
 - IVC obstruction
 - Lower Limb Phlebothrombosis
 - Trousseau's sign
- Abdominal Examination
 - Liver: May be nodular
 - Palpable gall bladder Common
 - Ascites Only in metastases

Q. How can you differentiate between acute cholecystitis and subhepatic appendicitis?

A.

Acute cholecystitis	Subhepatic appendicitis
- Tenderness is superficially located at 9th costal cartilage. - Murphy's sign is +ve. - Boa's sign is +ve. - Shereen hyperthesia is -ve. - On percussion, dullness under 9th costal margin if the gall bladder is distended.	- Tenderness deeply seated. - Murphy's sign is -ve. - Boa's sign is -ve. - Shereen hyperthesia is +ve. - No dullness at the coastal margin.

Q. What about the size of gall bladder in the case of O.J.?

A.

- It follows the Courvoisier's law:
The gall bladder is usually not palpable in calcular obstructive jaundice as the gallbladder is the seat of chronic disease and fibrosis, and it is usually palpable in obstructive jaundice due to cancer head of the pancreas as the gallbladder is healthy and distensible.
- This law has the following exceptions which represents 40%:
 1. Palpable gallbladder with calculus obstructive jaundice: a Metabolic stone with a healthy distensible gallbladder.
 2. A stone in the CBD causing jaundice and another one in the cystic duct causing a mucocele of the gallbladder. c. A stone of Hartman's pouch, obstructing both CBD and cystic duct (Mirrizi Syndrome)
 3. Cancer head of pancreas without palpable gallbladder: a. An associated cancer head with calcular cholecystitis.
 4. Cancer head with metastasis at porta hepatis causing obstruction of the bile duct above the level of the gallbladder which thus cannot be distended.
 5. Cholangiocarcinoma at porta hepatic (Klatskin tumor)

Q. What is the investigation of choice & what is its values?

A.

- ERCP: (endoscopic retrograde cholangio-pancreatography)
- The values:
- Diagnostic values:
 - 1- Visualization of biliary tree and pancreatic duct
 - 2- Sample of bile or pancreatic juice
 - 3- Visualization & biopsy of tumor that invade the duodenum
- Therapeutic values:
 1. Stone extraction
 2. Passing a catheter through a stricture to provide external biliary drainage
 3. Passing stent through stricture to provide internal biliary drainage

Q.what is the precautions of ERCP?

A.

- Prophylactic antibiotic (3rd generation cephalosporins) to avoid complications of ascending cholangitis.

Q. When do you do PTC& what are its precautions?

A.

- Done when ERCP failed to give enough data about the obstructing agent.
- It can visualize biliary tree above obstructing agent.
- PT should be done before the procedure to avoid hemobilia or hemoperitoneum.

Q. What is the value of plain X-Ray in obstructive jaundice?

A.

- It may show radiopaque gallstones, calcification of the gallbladder.

Q. What are the types of cholangiography?

A.

1. Intravenous cholangiography :

Biligram is injected I.V., the bile ducts and gallbladder are visualized but they appear very faint. That is why it is not more used nowadays, in addition to the side effects of biligram.

2. Endoscopic Retrograde Cholangiopancreatography (ERCP) :

The ampulla of Vater is cannulated with the aid of fiberoptic endoscope and the bile duct is injected urographin. The extrahepatic bile ducts are visualized.

3. Percutaneous Transhepatic Cholangiography (PTC) :

A Chiba needle, 15 cm long, is inserted in the 8th space midaxillary line to a point 2 cm to the right of the vertebral column. The needle is withdrawn until reveals bile. Conray 280 is injected and the biliary tree is visualized.

4. Preoperative Cholangiography :

This should be done routinely in cases of cholecystectomy. The cystic duct is cannulated, a catheter is passed through it into the common bile duct and Hypaque is injected.

5. Preoperative postexploratory cholangiography :

Is done intraoperative after exploration of common bile duct to reveal any residual stones.

6. Postoperative cholangiography (T-Tube Cholangiography) :

Is done on the tenth day after choledocholithotomy to reveal any missed stone

Q. What is the treatment of this case of calculi obstructive jaundice?

A.

▪ Pre-operative:

- Liver failure is treated if present.
- High intake of glucose.
- Decreased prothrombin level should be corrected by parenteral injection of Vit K.
- Blood culture & sensitivity and proper antibiotics are given if there is evidence of cholangitis
- Proper hydration by I.V. fluids and forced diuresis by Mannitol infusion to safeguard against hepatorenal failure to which these patients are susceptible

▪ There are mainly 2 methods:

1. ECRP + papillotomy:

- This method should be tried first, unless the stones are large in size or there is a stricture behind them.

-
- Through an endoscope, the duodenal papilla is divided. The stones are either:
 - a. Allowed to pass spontaneously, OR
 - b. Extracted by means of Dormia basket or balloon catheter.

2. **Choledecolithotomy:**

- This means operative incision of the CBD to remove the stone.
- It is done when the endoscopic removal of stones was not indicated or failed.
- Supraduodenal choledochotomy is done and the stones are retrieved by stone extraction forceps.
- Cholecystectomy is done in the same setting but can be delayed to another occasion if the patient was unfit.

Q. How can you suspect missed stone & how can you deal with it?

A.

- I can suspect missed stone as follow:
 - Patient with T- tube: excessive bile secretion from T-tube.
 - Patient without T-tube: persistence of jaundice.
- There are many methods to deal with missed stones:
 1. ERCP & papillotomy + extraction of the stone by Dormia basket
 2. Choledochoscopy : Waiting until a tract of T-tube is well developed and the stones are removed through a choledochoscope.
 3. Chemical Dissolution of the stones by injecting materials through the T- tube to dissolve the stone (e.g. hydroxy chenodeoxy cholic acid).
 4. Burhene Technique: Waiting until a tract of T-tube is well developed and the stones are removed by a special stone basket introduced through this tract.
 5. Operative intervention.

Q. What is the value of hypotonic duodenography in obstructive jaundice?

A.

- It may show :
 1. Rose thorning of the medial wall in cancer head of pancreas.
 2. Filling defect in the region of the ampulla in periampullary carcinoma.

Q. What is meant by "missed stone"?

A.

- This means that after operative choledocholithotomy, and on doing postoperative (T tube) cholangiography, filling defects of missed stones are seen in the cholangiogram.

Q. What is the cause of jaundice if associated with generalized Lymphadenopathy?

A.

- It may be due enlarged L.Ns at porta hepatis.

Splenomegaly

Case: EGYPTIAN SPLENOMEGALY

Q. What is your diagnosis?

A.

- Bilharizial splenomegaly.

Q. What is the pathology of Bilharizial splenomegaly?

A.

- There is a triad of:
 1. Bilharizial periportal fibrosis.
 2. portal hypertension.
 3. Congestive splenomegaly.

Q. Why this is a "swelling of the spleen"?

A.

- Because it is a swelling that has the following characters; these characters are arranged according to priorities:
 1. Intrabdominal: this can be detected by
 - Rising up test.
 - Movement with respiration.
 2. Anatomical site of the spleen in the left hypo chondrium.
 3. Sharp anterior border with a notch (pathognomonic).
 4. No ballottement.
 5. I cannot insinuate my fingers between the swelling and the costal margin.
 6. No band of resonance by percussion over the swelling.
 7. Not filling the renal angle and cannot be pushed to the renal angle.

Q. Why did you diagnose it bilharizial splenomegaly?

A.

1. History:
 - The type of the patient: young adult male anaemic farmer from endemic area.
 - Past history of Bilhariziasis.
 - History of haematemesis.
2. General examination:
 - Showed manifestation(s) of liver insufficiency (ascites, leg oedema, spider naevi, palmar erythema, flapping tremors, bleeding tendency, jaundice, gynaecomastia, foetor hepaticus, hepatic precoma or coma).
3. Local examination:
 - Spleen:
The characters of the enlarged spleen are those of the congestive splenomegaly (i.e. that is caused by portal hypertension). these characters include fine spleen; smooth, regular surface; Sharp border with a notch & enlarges towards Rt. Iliac fossa directed by phrenicocolic ligament

- The liver

The liver is enlarged with a sharp border and nodular surface (or is shrunken).

- Presence of other manifestations of portal hypertension (Ascites, Caput Medusae).

N.B. There are no manifestations of haemolytic anaemia or leukaemia or other blood diseases.

Q. What are the stages of bilharzial splenomegaly?

A.

- Stage I → Hepatomegaly.
- Stage II → Hepatosplenomegaly.
- Stage III → Shrunken liver + Splenomegaly.
- Stage IV → as III + Ascites.
- Stage V → as IV + Liver cell failure.

Q. Comment on the liver palpation in this case?

A.

- We should comment on palpation by the following points with the same arrangement:
- It has a sharp border, It is felt 3 fingers in the middle line and 2 fingers in midclavicular line below the costal margin; finely nodular surface and is not tender with no pulsations. (If the liver is tender start the comment with it).

Q. What are the characters of malignant spleen in palpation?

A.

- It has head border; It is of Rounded border & no notch; Spleen enlarges towards Lt. iliac fossa due to infiltration of phrenicocolic ligament with Irregular surface.

Q. What are the causes of an enlarged not palpable liver?

A.

- Normally the liver is not palpable (except in infants); enlarged liver can be palpated except in the following conditions:
 - 1) soft liver as in Rt. sided heart failure,
 - 2) rigidity of overlying muscles as in amoebic and pyogenic liver abscess,
 - 3) Upward enlargement of the liver as in amoebic hepatitis (due to perihepatitis limiting the downward enlargement).

Q. What are the causes of enlarged tender liver?

A.

- Inflammatory: Viral hepatitis, amoebic and pyogenic liver abscess.
- Congestion: congested liver diseases
- Malignancy.

Q. How do you detect the size of the liver clinically?

A.

1. By palpation.
 2. By percussion:
 - Lower border: Light percussion is done from below upwards in the midclavicular for right lobe and middle line for the left lobe. It is a light percussion.
 - Upper border: From above downwards on the intercostal spaces in the midclavicular line .it is a heavy percussion to avoid the resonant note of the lungs.
- N.B. The tidal percussion is on doing percussion for the upper border, when dullness is reached, patient is asked to have a deep breath & hold it. If it is the upper border of liver, dullness disappears.

Q. What are the causes of leg oedema in bilharizial Splenomegaly?

A.

Hypoalbuminaemia due to:

1. Lack of intake due to poverty.
2. Malabsorption due to congestive enteropathy.
3. Bleeding from varices or congestive gastropathy.
4. Liver cell failure.

Q. What is the aetiology of gynaecomastia in liver cell failure?

A.

- Defective metabolism of estrogen by the liver&decrease activation of testosterone.

Q. What is the aetiology of bleeding tendency in liver cell failure?

A.

1. Defective synthesis of prothrombin by the liver
2. Diminished factor V, VII, X
3. Thrombocytopenia due to hypersplenism
4. Thromboasthenia due to coating of platelets by abnormal globulins formed by RES

Q. What is hepatic encephalopathy?

A.

- It is a chronic fluctuating neuropsychiatric disorder.
- It occurs when Toxic products as (Ammonia, aminobutyric acid, methionine and mercaptan) which are normally detoxified by the liver; bypasses the liver to the systemic circulation in large amounts and hence can reach the brain and can affect it.
- This can occurs by:
 - Liver decompensation and collaterals
 - Surgically created portosystemic shunt operation

Q. How can these substances affect brain cells?

- A.
1. Through interference with Kreb's cycle leading to diminished energy production needed for the brain cells e.g. ammonia.
 2. Acting as false neurotransmitters e.g. Tyramine.
 3. Inhibiting cortical functions e.g. Benzodiazepine.

Q. What are the manifestations of hepatic encephalopathy?

- A.
- Insomnia, euphoria, inverted sleep rhythm, cogwheel rigidity of limbs, flapping tremors, semicoma and finally hepatic coma.

Q. What are the causes of portal hypertension?

- A.
- Portal flow obstruction due to:
 1. Prehepatic causes: Portal vein thrombosis, Portal vein compression, splenic vein thrombosis, Banti syndrome.
 2. Posthepatic causes: Budd-Chiari syndrome (occlusion of the hepatic veins by thrombosis or malignant tumor.), constrictive pericarditis, tricuspid regurge
 3. Hepatic causes:
 - Presinusoidal: Bilharizial periportal fibrosis.
 - Sinusoidal: cirrhosis
 - Post-sinusoidal: veno-occlusive disease.
 - Increased portal blood flow: as in myelofibrosis.

Q. What are the causes of portal vein thrombosis?

- A.
- Infants:
 - Umbilical catheterization
 - Umbilical sepsis
 - Adults:
 - Portal pyaemia (pylephlebitis)
 - Liver tumors.

Q. What is Banti Syndrome?

- A.
- It is vascular malformation of the portal vein leading to portal hypertension.

Q. Mention some causes of liver cirrhosis.

- A.
- Posthepatic (postnecrotic) cirrhosis, nutritional (Laennec) cirrhosis, alcoholic cirrhosis, and biliary cirrhosis.

Q. What are the complications of liver cirrhosis?

A.

1. Vascular decompensation in form of portal hypertension.
2. Cellular decompensation in the form of liver cell failure.
3. Malignancy (in 5% of portal cirrhosis).

Q. What is the mechanism of ascites in liver cirrhosis (in portal hypertension)?

A.

- 1) Transudation of lymph and water from the liver surface due to obstruction of intrahepatic lymphatics by fibrosis and regeneration nodules,
- 2) Hypoalbuminaemia due to :
 - Nutritional hypoproteinoemia.
 - Liver cell failure.
- 3) Salt & water retention due to defective aldosterone metabolism.
- 4) Increased capillary hydrostatic pressure in the peritoneum due to portal hypertension. it is the localizing factor.

Q. What is the main complication of portal hypertension?

A.

- Opening of portosystemic collaterals especially that in the lower end of the oesophagus (esophageal varices). Which may lead to bleeding (haematemesis and /or melena) which might be fatal.

Q. How would you know if a previous attack of haematemesis was severe?

A.

- If the patient had blood transfusion, this is considered a severe attack.

Q. What is melena?

A.

- It is passage black tarry soft offensive stools due to its content of digested blood.

Q. What are the common causes of haematemesis and melaena?

A.

- Bleeding oesophageal varices. (Commonest cause in Egypt).
- Acute gastritis.
- Bleeding peptic ulcers (acute and chronic).
- Cancer stomach.
- Mallory-Weiss syndrome.
- Blood diseases.

Q. What investigations do you ask for this case?

A.

1. Laboratory investigation.
2. Radiological investigation.
3. Endoscopic investigation.
4. Biopsy.

1. **Laboratory investigations:**

Blood picture: Helps in the diagnosis of:

- Haemolytic anemias (spherocytes, sickle cells, and target cells)
- Leukemias
- Thrombocytopenia
- Pancytopenia of hypersplenism
- Nutritional anaemia of Egyptian splenomegaly
- Polycythaemia.

Osmotic fragility test: for haemolytic anaemias.

Thick blood film: malaria.

Urine and stool analysis: for Bilharziasis and for presence of blood.

Liver function test: Plasma protein level is the most important one.

- Serum Bilirubin (N = < 1 mg %)
- Alkaline phosphatase (N = 3-15 KAU %)
- SGOT & SGPT (N = < 40 U %)
- Albumin (N = 4-5 gm %)
- Globulin (N = 2-3 gm %)
- A/G ratio (N - 2:1),

Prothrombin time & conc. (N = 11-13 sec. & 100%)

Bleeding & coagulation time (N - 2-4 & 4-8 min).

Sternal puncture: for leukaemias, hypersplenism and lymphomas.

2. **Radiological Investigations:**

Ultrasonography, Barium swallow, visualization of the portal circulation.

3. **Endoscopic investigations:**

Esophagoscopy for the diagnosis of varices.

4. **Biopsy:**

From the liver for diagnosis of Fibrosis or cirrhosis.

5. **Portal manometry.**

Q. When do you consider portal pressure abnormal?

A.

- Normal portal pressure is 100-150 mm water (7-11 mmHg). If it exceeds 15 mmHg; it is considered portal hypertension

Q. How can you demonstrate the presence of esophageal varices ?

A.

- Endoscopy (Esophagoscopy).
- Barium swallows which is rare to be done now.

Q. What is the treatment of this case of Egyptian splenomegaly?

A.

- Medical treatment: This is given for all cases = vitamins, tonics, high CHO and protein diet, liver tonics (liver extract, calcium and glucose).
- Specific treatment: For oesophageal varices, for ascites, for splenomegaly, and for liver cell failure.

Q. If the patient proves by investigations to have oesophageal varices, how would you proceed?

A.

- It depends on history of hematemesis:
- There is past history of hematemesis: the patient should be maintained on injection sclerotherapy, this is called chronic sclerotherapy. . If sclerotherapy fails to prevent rebleeding, the operation will be indicated.
- No history of bleeding (i.e. silent varices): there is no need for injection sclerotherapy. Follow up is the main treatment.

Q. What is the principle of this elective operation?

A.

Operative decompression of the portal pressure by:

- i) Portosystemic shunt operation.
- ii) Splenectomy devascularization procedure.

Q. How do you treat a case of bleeding oesophageal varices?

A.

- 1) Resuscitation (I.V. fluids & blood transfusion, ..).
- 2) Measures to stop bleeding.
 - Medical: (Vasopressine, glypressin, somatostatin)
 - Balloon tamponade (temporary measure)
 - Injection sclerotherapy or band ligation, if failed:
 - Percutaneous transhepatic obliteration of varices or transjugular intrahepatic porto-systemic shunt (TIPSS)
 - If no facilities → urgent operation (Hassab operation or stapler)
- 3) Measures to prevent rebleeding.

Q. What is curative splenectomy?

A.

- Splenectomy is considered curative if it is done for:
 - Traumatic rupture spleen.
 - Splenic abscess.
 - Congenital spherocytosis.
 - Thrombocytopenic purpura.
 - Sarcoma of the spleen.

Q. What is the best non-operative measure?

A.

Injection sclerotherapy.

- This occurs by injection of Ethanolamine oleate, sodium morrhuate and sodium tetradecyl sulfate.
- The site of injection depends on the acuity of the case:
- In emergency sclerotherapy, injection is done intravariceal to induce thrombosis.
- In chronic sclerotherapy, injection is done perivariceal to induce fibrosis.

Q. What are the indications of splenectomy in Egyptian splenomegaly?

A.

1. As a part of splenectomy vasoligation procedure.
2. Hypersplenism.
3. Huge disabling spleen which is liable for trauma.

Q. What is treatment of ascites due to liver cirrhosis?

A.

1. Conservative measures:

- Restriction of salt.
- Diuretics.
- High protein diet.

2. Measures for refractory ascites:

- Make sure of diagnosis.
- Make sure that the conservative measures are followed.
- Tapping.
- Recirculation of ascitic fluid via a dialysis membrane and reinfusion into a vein, Peritoneal-jugular shunt (Le Veen and Denever shunts).

Q. Is the renal angle resonant or dull?

A.

The renal angle is resonant; due to presence of gas in the colon (on both sides) and gastric air bubble (on the left side).

Other Oral Qs.

Q. common conditions presented with acute upper abdominal pain?

A.

- Oesphagitis
- Boerhaave's syndrome
- Perforated peptic ulcer
- Acute cholecystitis
- Gall stones & biliary colic
- Acute pancreatitis

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P393-394

Q. common conditions presented with chronic upper abdominal pain?

A.

- Chronic peptic ulcer
- Carcinoma of the stomach
- Chronic cholecystitis
- Chronic pancreatitis
- Liver metastases
- Splenomegaly

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P393-394

Q. common conditions presented with acute central abdominal pain?

A.

- Meckel's diverticulitis
- Inflammatory bowel disease (acute chron's- acute ulcerative colitis)
- Typhoid
- TB enteritis

Q. common conditions presented with chronic central abdominal pain?

A.

- Chron's ds
- TB enteritis
- Tumors of the small bowel
- Adhesive int.obstruction
- Ischemia of the small bowel

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Q. causes of generalized abdominal pain?

A.

- Irritable bowel syndrome
- Recurrent adhesive obstruction
- Mesentric ischemia
- Carcinomatosis
- Chronic constipation

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Q. causes of acute & chronic lower abdominal pain?

A.

- Appendicitis
- Crohn's ds
- CA caecum or RT colon
- Diverticular ds
- CA LT colon/ rectum
- PIDs

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Q. conditions likely to cause perforation of a viscus (causing acute peritonitis)?

A.

- PU
- Boerhaave's syndrome
- Gangerous appendicitis
- Perforated GB
- Acute diverticulitis
- Strangulation
- Ulcerative colitis(toxic megacolon)

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Q. causes of int. obstruction according to the age?

A.

- Neonates:
 - Atresia (duodenum, ileum)
 - Meconium plug \$
 - Volvulus neonatorum
- 3 weeks - CHPS
- 6-9 month - Intussusception
- Teenage
 - Appendicitis
 - Intussusception
 - Meckel's diverticulum
 - Polyp
- Young adult
 - Hernia
 - Adhesions
- Adult
 - Hernia
 - Adhesions
 - Inflammation (appendicitis-Crohn's ds
 - Carcinoma
- Elderly
 - Carcinoma
 - Sigmoid volvulus
 - Diverticulitis

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P413

Q. causes of acute abdomen?

A.

Group 1: Thoracic problems:

- ✓ Rt. Pneumonia:
- ✓ Marked chest symptoms, minimal abdominal tenderness and there is no rigidity.
- ✓ Tonsillar tummy:
- ✓ Child with acute tonsillitis □ swallows pus □ abdominal colic.
- ✓ Diaphragmatic pleurisy.
- ✓ Myocardial infarction.

Group 2: Upper Abdominal problems:

- ✓ Perforated Peptic Ulcer:
 - History of dyspepsia is present.
 - Plain X-Ray shows air under the diaphragm.
- ✓ Acute Cholecystitis:
 - Pain in the right hypochondrium
 - Fever is higher.
 - U/S will confirm the diagnosis.
- ✓ Intestinal Obstruction:
 - Repeated vomiting.
 - Absolute constipation.
 - Multiple fluid levels in X-Ray abdomen erect.

Group 3: Lower Abdominal Problems:

- ✓ Non-specific Mesenteric Lymphadenitis:
 - Common in children.
 - There is shifting tenderness
- ✓ Regional ileitis.
- ✓ Deep iliac adenitis:
 - Child with septic focus in LL
 - Pain in iliac fossa, psoas spasm
 - Flexion deformity, high fever and O/E
 - Tender nodular fixed mass in iliac fossa very close to inguinal ligament.
- ✓ Mickle's Diverticulitis.
- ✓ Perforated ileal typhoid ulcer:
 - History of typhoid, tenderness all over the abdomen X-Ray □ free gas in peritoneum (erect □ gas under diaphragm).

Group 4: Pelvic problems:

- ✓ Disturbed right ectopic pregnancy:
 - History of amenorrhea.
 - Shock.
 - Vaginal bleeding.
 - Tender cervix.
- ✓ Acute salpingitis:
 - Fever, vaginal discharge, tenderness often bilateral.

- ✓ Midcyclic pain (Mittelschmerz)
- ✓ Twisted right ovarian cyst from appendicular mass.
- ✓ PID:

- Vaginal discharge, bilateral pain, mass felt on PV

Group 5: Urological problems:

- ✓ Right ureteric coli:
 - Pain from loin → groin, pain does not increase with cough, patient writhing on himself while in appendicitis patient lies flat as movement increases pain.
- ✓ Rt. Pyelonephritis:
 - Fever 40°C + rigors, tender pain, dysuria.

Group 6: Neurological Problems:

- ✓ Disease of the spine:
 - Acute osteomyelitis & Pott's of dorsolumbar vertebrae.
- ✓ Herpes Zoster in 10th, 11th, 12th thoracic nerves.
- ✓ Others:
 - Diabetic abdomen.
 - FMF.

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Q.causes of hematemesis & melena?

A.

- chronic PU. (spontaneous-steroids)
- acute gastric erosion (asprin)
- CA stomach
- oesophageal varices
- purpura
- hemophilia

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P419

Q. causes of hepatomegaly?

A.

According to their clinical presentation into:

Smooth generalized enlargement without jaundice

- Congestion from Ht. failure
- Cirrhosis
- Lymphoma
- Budd-chiari syndrome
- Amyloidosis
- Kala-azar
- Gaucher's ds

Smooth generalized enlargement with jaundice

- Infective hepatitis
- Biliary tract obstruction (gall stones or CA head of pancreas)
- Cholangitis
- Portal pyemia

Knobby generalized enlargement without jaundice

- Metastatic deposits
- Cirrhosis
- Polycystic ds
- Hepato cellular carcinoma or cholangiocarcinoma

Smooth generalized enlargement with jaundice

- Metastatic deposits
- Cirrhosis

Localized swelling:

- Hepatocellular carcinoma
- Liver secondary

Another classification:

- Infection
- Congestion
- Bile duct obstruction
- Cellular infiltration
- Cellular proliferation
- Space occupying lesion

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P421

Q. causes of splenomegaly?

A.

Infection:

- bacterial: typhoid
TB
Brucellosis
Septicemia
- viral: glandular fever
EBV
- spirochates syphilis
- protozoal bilharziasis
malaria

cellular proliferation:

- myeloid & lymphatic leukaemia
- lymphoma
- pernicious anaemia
- spherocytosis & hemolytic anaemia
- thrombocytopenic purpura
- myelofibrosis
- sarcoidosis

Infarctin & injury:

- emboli from bacterial endocarditis
- splenic artery or vein thrombosis
- hematoma

Cellular infiltration:

- amyloidosis
- Gaucher's ds

Collagen ds:

- felty's ds
- still's ds

Space occupying lesion:

- solitary cyst
- hydatid cyst
- lymphoma & lymphosarcoma

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P422

Q. causes of renal mass?

A.

- Hydronephrosis
- Pyonephrosis
- Malignant ds
- Solitary cyst
- Polycystic ds
- Hypertrophy

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Q. other causes for abdominal swellings?

A.

- Pancreatic pseudo cyst
- Mesenteric cyst
- Retroperitoneal tumors
- Cancer stomach
- Distended gall bladder (in CA head of pancrease)
- Ovarian cyst
- Pregnant uterus
- Fibroid
- Faeces
- UB

Q. causes of abdominal distention?

A.

- 1-Fetus (pregnancy is the commest cause)
- 2-Flatus
- 3-Faeces
- 4-Fat
- 5-Fluid (free/ encysted ascitis)

-
- 6-Large solid tumor such as:
- Fibroid
 - Causes of hepatomegaly
 - Causes of splenomegaly
 - Renal mass e.g polycystic kidney
 - Retroperitoneal sarcoma

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P431

Q.causes of ascitis?

A.

- 1- Increase in the portal venous pr.:
 - Prehepatic
 - Hepatic
 - Posthepatic
- 2- Causes of hypoproteinemia
- 3- Causes of chronic peritonitis
- 4- Chylous ascitis

Q. causes of mass in the RT iliac fossa?

A.

➤ **Parietal Swellings:**

☑ **Skin**

- Sebaceous cyst.
- Haemangioma.
- Abscess.
- Haematomas.

☑ **S.C tissue:**

- Lipoma.
- Neurofibroma.
- Neurofibrosarcoma.

☑ **Muscles layer:** fibrosarcoma.

☑ **Incisional and paralytic hernia.**

➤ **Intraabdominal swellings:**

☑ **GIT:**

- Ileum
- Caecum: colonic carcinoma.
- Ileocaecum: ileo-caecal TB, ileo-caecal actinomycosis.
- Appendix: appendicular mass or abscess.

☑ **Tubo-ovarian:**

- Ovarian cyst or tumor.
- Hydrosalpinx or pyosalpinx.
- Tubal pregnancy.

☑ **Uterus:** Fibroid.

☑ **Renal:**

- Ptosed kidney.
- Ectopic kidney.

✓ Vascular:

- Rt. Iliac a. aneurysm.
- Rt. Iliac LNs:
 - Lymphadenitis: acute and chronic (non-specific and specific e.g TB lymphadenitis)
 - Malignancy: lymphoma and metastatic carcinoma.

✓ Muscular

Retroperitoneal sarcoma or malignant undescended testis

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P428

Q. causes of swelling in the LT iliac fossa?

A.

➤ **Parietal swelling:**

✓ Skin:

- Abscess
- Sebaceous cyst.
- Haematomas.
- Haemangioma

✓ S.C tissue:

- Lipoma.
- Neurofibroma.
- Neurofibrosarcoma.

✓ Muscle layer: fibrosarcoma.

✓ Hernia: incisional & paralytic.

➤ **Intraabdominal swelling:**

✓ Visceral:

- Pelvic carcinoma.
- Diverticulitis.
- Spastic colon.
- Pelvic colon:
- Bilharzial mass.

✓ Tubo-ovarian:

- Ovarian cyst or tumor.
- Hydrosalpinx or pyosalpinx.
- Tubal pregnancy.
- Fibroid.

✓ Renal:

- Ectopic kidney.
- Ptosed kidney.

✓ Vascular:

- Lt. iliac a. aneurysm.
- Lt. iliac lymphadenopathy:
 1. Lymphadenitis: acute & chronic (non-specific & specific e.g. TB lymphadenitis).
 2. Malignancy: lymphoma & metastatic carcinoma.

✓ Muscular: ileo-psoas abscess.

✓ Retroperitoneal sarcoma, or malignant undescended testis

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P430

Q. causes of dyspepsia?

A.

✓ Esophageal causes:

- GERD.

✓ Gastric causes:

- Chronic gastric ulcer.
- Gastric carcinoma
- Chronic gastritis.

✓ Duodenal causes:

- Chronic duodenal ulcer.
- Duodenitis.

✓ Biliary causes:

- GB stones.
- GB carcinoma.
- Chronic cholecystitis.

✓ Pancreatic causes:

- Chronic pancreatitis.
- Pancreatic carcinoma.

✓ Congestive dyspepsia (portal HTN)

✓ Appendicular dyspepsia (chronic appendicitis)

✓ Colonic dyspepsia esp CA caecum

Q. conditions which present with rectal bleeding but no pain?

A.

- Blood mixed with stool: carcinoma of the colon
- Blood streaked on stool: carcinoma of the rectum
- Blood after defaecation: haemorrhoids
- Blood and mucus: colitis
- Blood alone: diverticular ds
- Melena: peptic ulcer
- Bleeding + pain: fissure (or carcinoma of the anal canal)

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P455

Q. anal conditions which present with pain?

A.

- Pain alone:
 - Fissure (pain after defecation)
 - Anorectal abscess
 - Proctalgia fugax
- Pain & bleeding:
 - Fissure
- Pain & lump
 - Perianal haematoma
 - Anorectal abscess
- Pain, a lump & bleeding
 - Prolapsed haemorrhoids
 - Carcinoma of the anal canal
 - Prolapsed rectal polyp or carcinoma
 - Prolapsed rectum

Browse's introduction to the symptoms & signs of surgical disease/ Ch15 the abdomen/ P459

- 11 -

ULCER SHEET

Case Sheet for Ulcer

Types of ulcers

- **Malignant** → SCC, BCC, ulcerative malignant melanoma
- **Inflammatory** → TB, \$
- **Trophic ulcer** → peripheral nerve injury
- **Venous ulcer** → dt. Varicose veins in LL
- **Ischaemic ulcer** → dt. Chronic ischemia

History

Personal H:

Name, Age, Sex, Address, Residence, Occupation, Marital status & special habits of medical importance, if ♀ → menstrual history

Complaint: (Sore) بلفظ المريض إيه اللي جابك المستشفى

HPI: آخر مرة كنت سليم امتي

- Pain:

Site, Character, Radiation, What increase or decrease, Onset, Course, Duration, Severity, and What associates.

- T.B → painful.
- Venous → painful.
- Ischemic → painful.
- Trophic → painless.
- Neoplastic → painless except late.

- Ulcer:

a. Onset إبتدا ازاي

- Accidental
- Acute onset
- Gradual onset

b. Course:

- Progressive: → neoplastic.
- Stationary: → chronic inflammation.
- Regressive: → inflammatory conditions.
- Fluctuating: → chronic inflammation with acute exacerbation.

c. Duration: أول مرة لوحظ

- Short : (days or weeks) → inflammatory.
- Long : (months or years) → neoplastic .

d. Site

e. Size

f. Number

g. Effect on the general condition:

h. Apparent causes:

1- Congenital:

- Hemolytic anemias (rare) (i.e. History of hemolytic crisis)

2- Traumatic:

- Bed sores or trauma (i.e. History of trauma)

3- Inflammatory:

- T.B. ulcer (night sweat & fever + loss of weight & appetite)
- Ulcer (skin rashes + F.H.A.M)

4- Neoplastic (Marjoline ulcer)

5- Arterial: ischemic ulcer

- History of claudication pain.

6- Venous: venous ulcer

- History of associated varicose veins.

7- Lymphatic: lymphoma

- History of multiple swellings all over the body

8- Nervous: Neuropathic ulcer

- History of numbness or sensory loss

- **Disturbance of function:**

1- Discharge.

2- Dangerous area of the face.

3- Discharging sinus

- **Other systems:**

- **History of investigations or medications**

Past history:

- Similar attacks.
- Common diseases: (**DM, Hypertension, TB, B, Hepatitis, DVT**).
- Drug allergy & intake.
- Blood transfusion.
- Previous Operations.

Family history:

- Similar condition in one of the members of the family.
- Consanguinity.

Examination

General :

- Body built.
- Decubitus
- Facial expressions.
- Complexion → (3 colors) Jaundice, pallor & cyanosis.
- Chest & heart
- Abdomen.
- Extremities
- Pulse, blood pressure & temperature.
- Head, Neck, Spine (esp. in breast swelling) → 3 تانيين

N.B. General examination may reveal the apparent cause as hemolytic anaemia.

اسطمية 3

حاجات 3

Local : سلم على العيان و قف على يمينه

Exposure → till area of L.N drainage.

Inspection: بصة

1. Site:

- Venous ulcer → gaiter area.
- Rodent ulcer → face (above line between angle of mouth and ear).

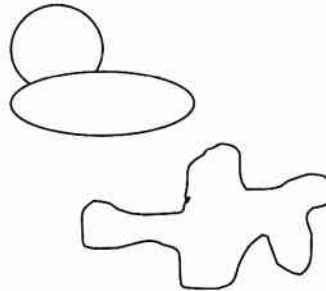
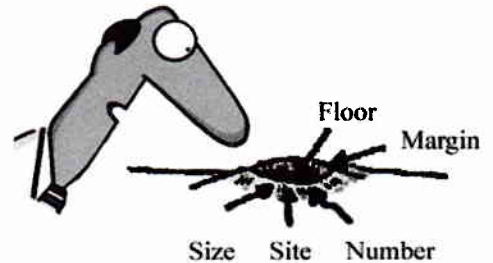
2. Size:

3. Shape:

- Rounded.
- Oval.
- Geometrical.

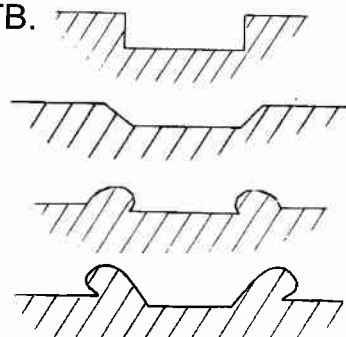
4. Number:

- TB → multiple
- Malignant → single



5. Edge:

- Punched out → \$, venous, TB.
- Undermined → TB.
- Sloping → healing.
- Irregular → traumatic.
- Rolled in → BCC.
- Everted → malignant.



6. Floor:

- TB → caseous material.
- Neoplastic → necrotic.

7. Margin:

- Inflammatory → red, tender.
- TB → cyanotic.
- Venous → pigmentation & eczema.

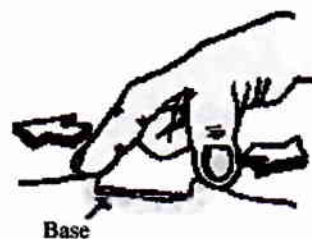
<i>Floor</i>	Healthy	Unhealthy
<i>Amount</i>	Reasonable "flat with the surface epithelium".	Scanty or exuberant
<i>Surface</i>	Granular	Smooth and glazed
<i>Colour</i>	Florid red	Pale red
<i>Discharge</i>	Minimal or nil	Excessive pyogenic
<i>Pyogenic membrane</i>	Not present	May be present
<i>Bleeding on touch</i>	Not easily	Easily
<i>Odour</i>	Fishy	Offensive

8. Discharge: bloody, purulent

Palpation: حركة

1. Base:

- Indurated → venous, ischemic
- Infiltrative → malignant



2. Tenderness: عيني على وجه العيان

- TB → tender
- neoplastic → not tender except late.
- Venous → tender
- Ischaemic, trophic → not tender

3. Relation to other structures according to suspected cause:

- Pulsation in ischemia.
- Oedema in venous.
- Sensation in neuropathy.

Lymph nodes:

No examination of a swelling is complete without the examination of the draining L.Ns

Special investigations

Laboratory investigation:

Hb%, urine and stool analysis, blood sugar, blood urea.

Radiological investigations:

Plain X- ray, Doppler, duplex U/S.

Pathological investigation:

Biopsy (Excisional).

Provisional diagnosis

Anatomical

It is diagnosis of the region which is affected.

Pathological

traumatic, inflammatory, neoplasticetc.

Associated condition

T.B., venous, malignant ...etc.

Browse's introduction to the symptoms & signs of surgical disease/ Ch1 history & examination of an ulcer/ p32

Ulcer

Case: RODENT ULCER

Q. What is your diagnosis?

A.

- An ulcer in the..... (Mention the region of the face), most probably a rodent ulcer.

Q. How you reach the diagnosis?

A.

- Due to the presence of the pathognomonic features of the rodent ulcer which are:
 - The raised, rolled-in edge: Because of the rapid growth of the tumor at the edge as opposed to necrosis in the center of the ulcer.
 - The pigmented edge. - The beaded edge.

Q. What are the other characters of rodent ulcer?

- Site: above a line extending between corner of mouth and lobule of ear.
- Size: any size.
- Shape: rounded, oval or irregular.
- Edge: raised, rolled in, beaded and pigmented.
- Floor: covered with a crust.
- Base: Indurated, may be fixed to the underlying tissue (muscle, cartilage or bone)
- Margin: may be pigmented.
- Draining L.N.: Usually not enlarged.

Q. How can you differentiate the ulcer of squamous cell carcinoma of the face from the rodent ulcer?

A.

- The ulcer of squamous cell carcinoma of the face is characterized by:
 - Site: Anywhere in the face, usually in lower lip.
 - Size: Any size.
 - Shape: Rounded, oval or irregular.
 - Edge: Raised, rolled out, everted.
 - Floor: Raised, irregular showing necrotic tissue.
 - Base: Indurated, may be fixed to the underlying tissue (muscle, cartilage or bone)
 - Margin: May be pigmented.
 - Draining L.N.: May show metastases.

Q. What you expect the findings in the draining L.N. in a case of rodent ulcer?

A.

They are not enlarged but they may be enlarged in two conditions:

1. Secondary infection of the ulcer leading to 2ry lymphadenitis (L.N. are small, tender, discrete, soft to firm)
2. Transformation of the basal cell carcinoma into squamous cell carcinoma leading to metastases in the draining L.N. (L.N. are large, hard, not tender, matted, fixed)

Q. What are the precancerous conditions of the skin?

A.

1. Exposure to sunlight → Squamous cell carcinoma & Basal cell ca.
2. Leucoplakia → squamous cell ca.
3. Senile (solar) keratosis → Squamous cell carcinoma, & Basal cell ca.
4. Xeroderma pigmentosum → Squamous cell carcinoma & Basal cell ca.
5. Chronic scars, chronic ulcers, chronic fissures → Marjolin ulcer
6. Papilloma → Squamous cell ca.
7. Kcratoacanthoma → Basal cell ca.

Q. What investigations do you want to do in this case?

A.

In addition to routine investigations,

1. X ray skull: to show any invasion of the underlying bone (if the ulcer is overlying and attached to underlying bone)
2. Biopsy: which show the palisade appearance in the histological study
According to the size of the ulcer
 - If the ulcer is large: Wedge biopsy from the edge
 - If the ulcer is small: total excisional biopsy

Q. How would you treat the case?

A.

- We have two methods for the treatment of rodent ulcer which are equally highly likely to cure the condition:

A. Surgery:

Is preferred in most of the cases because:

- It cures rapidly.
- It yields better cosmetic results (radiation produces an ugly scar).
- If the ulcer is overlying cartilage or bone, radiation is contraindicated (causes necrosis of the bone or cartilage) and
- It does not need radiation facilities.
- Excision should include the healthy layer immediately below the layer involved at least till the deep fascia with safety margin 1cm.
- We cover the defect after the excision of the ulcer with Skin graft or skin flap according to the extent of the depth of excision.

B. Radiotherapy:

- 3400 R is used for 14 days.

Q. What is the treatment of epithelioma of the face?

A.

As in rodent ulcer, there are two methods of treatment; Surgery & Radiotherapy. Surgery is preferred in most of the cases (reasons mentioned before). The safety margin will be 1 cm.

- If the draining L.Ns are involved, block neck dissection is done on the affected side.
- If the draining L.Ns. are not involved, follow up is essential for fear of development of secondaries in L.Ns.

Case 2: venous ulcer

Q. what is your diagnosis?

- A.
- Achronic leg ulcer on the medial side of the leg (in the gaiter area) most probably venous ulcer

Q. how do you reach ur diagnosis?

- A.
- Due to the presence of pathognomnic features of the venous ulcer which is:
 - Site: in the gaiter area just above the medial malleolus
 - History of the cause:
 - DVT: painful swollen limb
 - Varicose veins: but in 50 % of the cases, no manifestation of VV

Q.what are other criteria of venus ulcer?

- A.
- Site: As above
 - Age: At first slopping & irregular , later on punched out
 - Margin: Skin around it is pigmented
 - Base: Indurated
 - Floor: - Infected: dirty granulation tissue
 - Non-infected : healthy granulation tissue
 - LN: Enlarged if infected

Q. What are other causes of chronic leg ulcer?

- A.
- 1- Inflammatory ulcer: eg chronic osteomyelitis ulcer- tp., syphilis
 - 2-Traumatic ulcer
 - 3-Neoplastic ulcer eg: squamous cell carcinoma , melanoma
 - 4-Vascular ulcer : - ischemic ulcer – venus ulcer - lymphatic ulcer
 - 5-Neuro trophic ulcer

Q.What are the complications of this ulcer?

- A.
- Infection, hemorrhage, osteomyelitis, periostitis, marginal ulcer, teleangiectatic ulcer.

Q.how to differentiate between venous ulcer & ischemic ulcer?

- A.
- See Vascular book

Q. what are the investigations that can be done?

A.

- Inv for the cause: e.g: Doppler & duplex, biopsy if suspecting malignancy

Q. what is the treatment of the venous ulcer?

A.

I-conservative treatment for early ulcer:

1. Rest
2. Elevation of the limb
3. Elastic stockings
4. Dressing with saline & not antiseptic because of the eczema most ulcers heal in 3-4weeks (EUSOL: "edembra universalsolution of life" Can be used as a mild antiseptic)

II-surgical for resistant recurrent ulcer:

1. Cockett & Dodd operation: subfascial ligation of the ankle perforators
2. If failed excise the ulcer & cover it by cross leg skin flap
3. Then treatment of the cause e.g varicose veins

Case 3: ischemic ulcer

→ See the chapter of ischemia

- 12 -

**MISCELLANEOUS
SHEET**

Hip Sheet

Introduction:-

Age incidence of hip disorders

<i>Age of time of diagnosis</i>	<i>Disease</i>
0-2	developmental (congenital) dislocation
2-5	tuberculosis arthritis, transient synovitis
5-10	perthes's disease; transient synovitis
10-20	slipped upper femoral epiphysis
20-50	osteoarthritis (2ry to previous injury or dis.)
50-100	osteoarthritis (1ry)

Hip joint symptomatology

Pain

	☆ Pain arising from hip "true hip pain"	☆ Pain referred to hip "false hip pain"
A/E	Hip joint pathology	Spine disease
Description	Felt mainly in groin, front or inner side of the thigh Referred to knee	Felt mainly in gluteal region radiates to the back or outer side of thigh
↑ by	walking	Stopping & lifting objects often eased by walking

Limping

<i>Unilateral</i>		<i>Bilateral</i>
Antalgic gait	Trendelenburg gait	waddling gait
Pt. tends to :- · use a stick in the opposite hand · minimizing the period of wt. bearing on the affected limb	· Pt. leans towards the affected side to lift the sound leg clear of the ground.	In cases of:- Bil. D.D.H. Or Bil. Coxa vara

Deformity of the Hip

Causes:

Synovitis , ant. dislocation. of hip  abd., flexion , external. rotation.
 Arthritis, post. dislocation of hip  add. , flexion, internal rotation
 coxa vara , fracture N. femur  shortening & external rotation.

O/E:

Fixed flexion deformity: *masked by lumbar lordosis*

Fixed abd. deformity : ➤ *apparent lengthening*
➤ *scoliosis (the curve towards healthy side)*

Fixed add. deformity ➤ *apparent shortening*
➤ *scoliosis (the curve toward dis. side)*

Swelling

Analysis of swelling (as any swelling)

See general sheet

Routine Clinical Examination in Suspected Disorders of the Hip:-

A) Local ex. of the Hip:

Exposure:

Pt. should be stripped except for a pelvic slip (and a bra. If female)

Inspection:

The pt. is walking ⇨ Gait

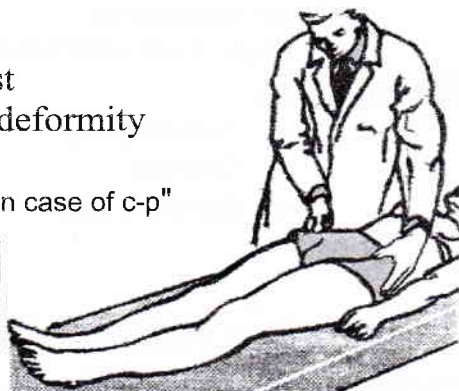
The pt. is standing ⇨ Trendelenburg's test

The pt. is supine ⇨ examine for fixed deformity

The pt. is prone ⇨ Ely's test

"for rectus femoris spasm in case of c-p"

N.B.: while the pt. is supine, preliminary step is setting the pelvis square with the limbs=leveling.



Palpation:

Warmth -Denote active reaction inside the joint
 -Mid inguinal point tenderness → sure lesion

Tenderness (O.A.) in hip
 Tenderness on pushing greater troch. → fracture neck or dislocation

L.N.

Narath's sign: Absent femoral pulsation in cases of neglected
 post. hip disloc. or DDH

Movements:

"Start with active then complete with passive mov."

Flexion: 130°

Extension: Nil

(Test while the knee is flexed to abolish action of hamstring)

Abd. 30° -35°

& abd. In flexion : 70°

Add.: 25° -30°

Rot.: 40°

N.B.: If rotation. is limited in hip extension & of normal range in flexion: normal joint but spasm of ileopsoas ms. dt. Appendicitis or iliac abscess

Measurements:

a- Girth (circumference) → ms. wasting "Glutei"

b- Length

❖ *Real(true):*

- *Supratroch.*
- *Subtroch:*
 - *Femur*
 - *Tibia*

❖ *False:(apparent)*

Only if uncorrectable sideways tilting of the pelvis

Special test:-

- *Telescoping.*
- *Ortolani.*
- *Barlow's test.*

B) Systemic examination in cases of TB of hip.

C) Examination of the spine for extrinsic cause of hip pain

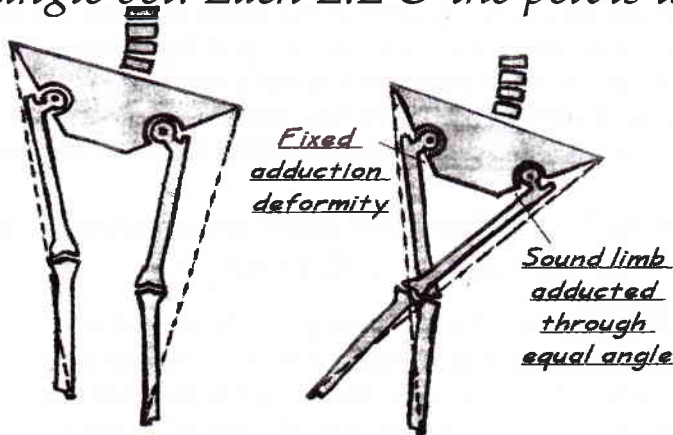
Browse's introduction to the symptoms & signs of surgical disease/ Ch4 Ms, tendons, bones, & joints p127, 128

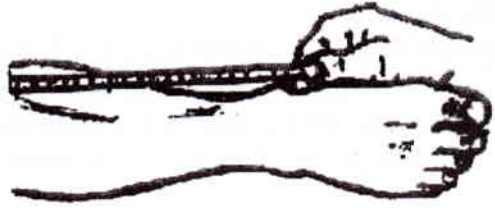
Measurements

Real or True length measurements From ASIS to medial malleolus

To obtain an accurate comparison of true length by surface measurements, the two limbs must be placed in comparable position relative to the pelvis i.e :

The angle bet. Each L.L & the pelvis is the same



<i>Incorrect method</i>	<i>Correct method</i>
if one limb is adducted & can't be brought out to the neutral position, the other limb must be adducted through a corresponding angle by crossing it over the 1st limb before measurements are taken similarly if one hip is in fixed abduction	
A) Fixing the tape measure at ASIS with the flat metal end placed immediately distal to ASIS & pushed up against it.	B) Taking the reading at the medial malleolus where the tip of index finger is placed immediately distal to the medial malleolus & pushed up against it
 A	 B

If there is real shortening determine whether:

- Supra trochanteric Or
- Sub trochanteric

Tests for supra troch. shortening :

The measurement of Bryant's Δ

Nelaton's line

The construction of shoemaker's line

❖ **Bryant's Δ :** With the pt. lying supine

- a perpendicular line is dropped from the ASIS towards the couch
- a 2nd line is projected upwards from the tip of the greater troch. to meet the 1st line at right angle (this is the important line)
- it is measured & compared on the two sides)
- The 3rd line is unimportant; it joins the ASIS to the tip of greater troch.

(N. B. if there is a possibility that both sides are abnormal, measurements of Bryant's Δ is NOT helpful)

❖ **Nelaton's line:** With the pt. laying on the sound side

- A string is stretched on the affected side from ischial tuberosity to ASIS.
- Normally, the greater trochanter lies on or below that line
- IF lies above it → the femur has been displaced upwards

❖ **Shoemaker's line**

- A line is projected on each side of the body from the greater trochanter Through & beyond the ASIS.
- Normally, the two lines meet at the midline above the umbilicus
- IF one femur is displaced upward (owing to supra troch. shortening) → the lines will meet at or near midline but below the umbilicus.

Subtroch. Shortening:-

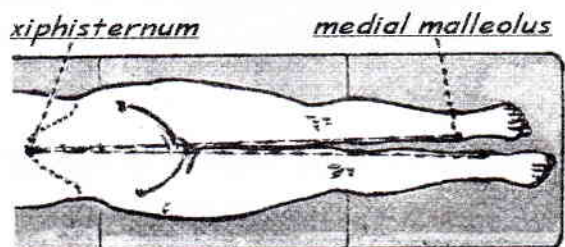
Individual measurements should be made for the:-

- Femur (tip of greater troch to line of knee joint)
- Tibia (line of knee joint to medial malleolus)

On each side

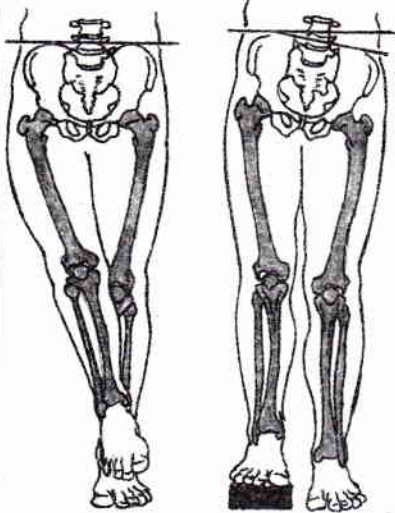
Measurements of "apparent" discrepancy in limb length:

- TO measure apparent discrepancy , the two limbs must be placed parallel to one another & in a line with the trunk
- Measurements are made from xiphisternum to each medial malleolus .

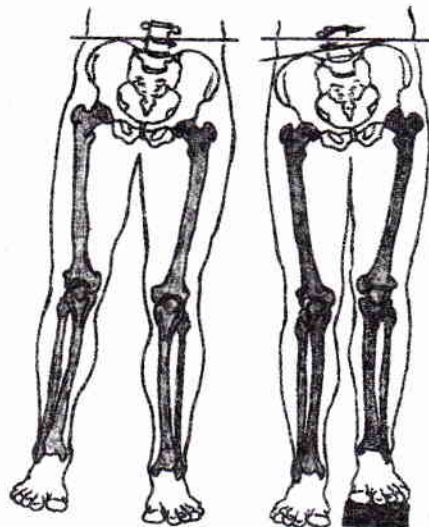


The usual cause is:-

Fixed adduction deformity at one hip → appearance of shortening on that side.



Fixed abduction deformity at one hip → appearance of lengthening on that side.



☉ N.B.:-



Apparent or false discrepancy in Limb length is dt. Uncorrectable sideways tilting of the pelvis,

SO,

There's no need to measure for apparent discrepancy if pelvis lies square with the limbs as determined by position of the two ASIS.



Examination for fixed deformity

Fixed adduction deformity :

The transverse axis of the pelvis (as indicated by the inter-spinous line) can't be set at a right angle to the affected limb but acute angle with it.

Fixed abduction deformity: Obtuse angle.

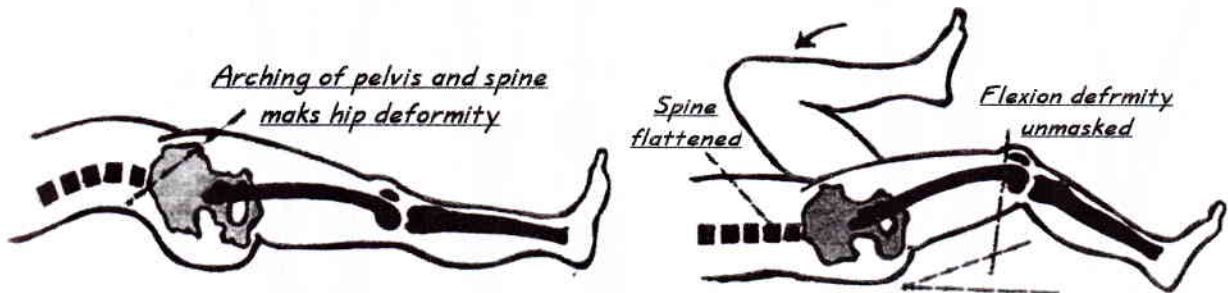
Fixed flexion deformity:

Browse's introduction to the symptoms & signs of surgical disease/ Ch4 Ms,tendons, bones.& joints/P114-115

Thomas Test

- **Principle:-**

- If there is a fixed flexion deformity at the hip the pt compensate for it (when he lies on the back) by arching the spine & pelvis into exaggerated lordosis, this allows the affected limb to lie flat on the couch.
- To measure the angle of fixed flexion deformity, it is necessary to correct the lumbo-pelvic lordosis. This is done by flexing the pelvis (and with it the lumbar spine) by means of the fully flexed sound limb.



- **Technique :-**

- One hand is placed behind the lumbar spine to assess the degree of lumbar lordosis:-
 - If no ↑ lordosis → no fixed flexion. (and so, do not proceed.)
 - If ↑ ↑ lordosis → the sound limb is flexed to the limit of its range then the limb is pushed further into flexion till the arching of spine is obliterated.
- During this maneuver, the thigh of the disordered limb (if in fixed flexion) is automatically raised from the couch as the lumbar lordosis is decreased.
- The angle through which the thigh is raised from the couch is the angle of fixed flexion deformity.

Fixed rotation deformity :

- The most reliable index of the rotational position of the thigh is the patella which normally points forward or slight lateral rot.(max.:15°)
- If there's fixed lateral or medial rotation, the limb can not be rotated to neutral position.
- The angle by which it falls short of the neutral when rotated as far as possible is the angle of fixed rotation deformity

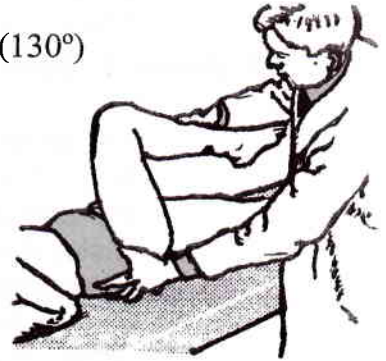
Movements

"It is essential to place one hand upon the pelvis to detect any movement there to avoid masking restricted hip mov. by mov. of the pelvis"

1. Flexion

The normal range of true hip flexion about (130°)

- Best demonstrated by flexing the hip & knee together and not by lifting the leg with straight knee.
- Movement of the pelvis is best detected by grasping the crest of ileum.
- Only in this way it is possible to distinguish between true hip flexion & the false flexion done by rotation of the pelvis.



2. Abduction

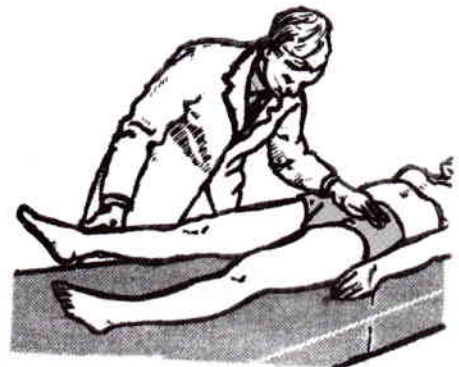
"The normal range of the abduction at the hip is 30° - 35° "

- The limb to be tested is supported by one hand while the other hand bridges the pelvis from ASIS to ASIS.
- In this way true abd. At the hip can be differentiated from the false abd. That is done by tilting of the pelvis.

3. Abduction in flexion

The normal range is about 70°

- This is often the 1st mov. to suffer restriction in arthritis of the hip.
- The pt. flexes his hip & knees by drawing the heels towards the buttocks. Then he allows the knees to fall away from one another towards the couch.



4. Adduction:

The normal range of adduction is about 25° - 30° .

- The limb to be examined is crossed over the other limb.
- Care must be taken to differentiate bet.
- True adduction & the false mov. done by tilting of the pelvis

5. Lateral rotation and medial rotation

The normal range of both medial & lateral rotation is 40°

6. Extension :

The range of extension at the hip is Nil

N.B.: Extension of the hip joint beyond the neutral position is prevented by the strong anterior capsule & reinforcing Y-shaped ligament

N.B.: Backward mov. of the thigh is due to rotation of the pelvis & extension of the spine & not by extension of the hip joint proper.

Examination for abnormal mobility

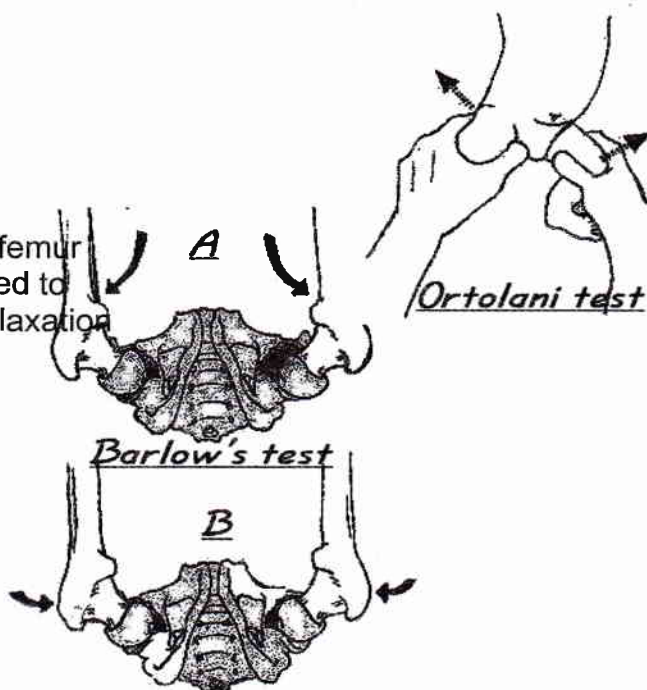
In cases of marked instability of the hip esp. in children:

❖ Telescoping test :

- The limb is grasped firmly in one hand and alternately pushed and pulled in its long axis.
- The trunk being steadied by the other hand upon the iliac crest.

❖ Ortolani & Barlow's test:

- Gentle abduction and
- Adduction of the flexed
- Hip and reduction or
- Dislocation of the head
- Direct pressure on the
- Longitudinal axis of the femur while the hip is adducted to detect any potential subluxation or posterior dislocation



Examination for postural stability

"Trendelenburg test"

The Trendelenburg maneuver is a test of the stability of the hip and particularly of the ability of the hip abductors (gluteus medius & gluteus minimus) to stabilize the pelvis upon the femur when the subject is standing upon one leg.

❖ Principle of the test :

- Normally, when one leg is raised from the ground, the pelvis tilts upwards on that side through the action of the hip abductors of the standing limb.
- If the abductors are inefficient, they are unable to sustain the pelvis against the body weight and it tilts downwards instead of rising up on the side of the lifted leg.



❖ *Technique :*

Stand behind the pt.

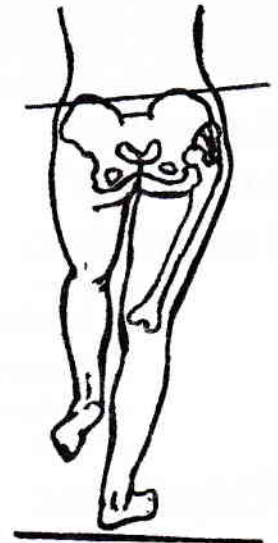
- Instruct him first to stand upon the sound limb and to raise the other from the ground (having thus got the idea of what he is required to do.)
- He should now stand on the affected leg & lift the sound leg from the ground.
- By inspection, or by palpation with a hand upon the iliac crest, observe whether the pelvis raises or falls on the lifted side.

Remember that the limb upon which the pt. stands is the one under test.

If the pelvis rises on the opposite side (normal) the test is negative . if it falls, the test is positive in other words the abductor muscles are incapable of stabilising the pelvis upon the femur.

Causes of positive Trendelenburg test.

1. Paralysis of the abductor muscle (eg.: poliomyelitis)
2. Marked approximation of the insertion of the abductor muscles to their origin by upward displacement of the greater trochanter, so that the muscles are slack (eg.: severe coxa vara, developmental dislocation of hip)
3. Absence of a stable fulcrum about which the abductor muscles can act (eg.: ununited fr. of the femoral neck).
4. Sometimes two of these factors may operate together: for instance, in a case of upward dislocation of the hip there may be an unstable fulcrum as well as approximation of the origin of the abductor muscles to their insertion.



Browse's introduction to the symptoms & signs of surgical disease/ Ch4 Ms,tendons, bones,& joints/P130-131

Knee Sheet

C/O: Pain :- due to.

- Intrinsic cause
- extrinsic cause

Recurrent attack of locking & unlocking:-

Def.:- sudden inability to complete the movement

Causes :- Meniscal tear

Chondromatosis synovitis

Osteophytes of O.A.

Osteochondral fr.

Giving way = no stability

Knee Examination

Exposure: the whole length of the limb must be uncovered

Inspection:

- Skin
- Swelling
- Wasting: "*quadriceps is the mirror of knee joint*"
- Deformity
- Gait: (CB4).

Palpation:-

- Warmth
- Tenderness
- Diffuse joint swelling

Movement:-

- "zero line is straight limb"
- Flexion: 140° - 150°

Stability:-

- Stress valgus test → for medial collateral lig.
- Stress varus test → for lateral collateral lig.
- Anterior & posterior drawer test → for cruciate lig.

Rotation test (McMurray):-

(Of value mainly when a torn meniscus is suspected).

Diffuse Joint Swelling

❖ *Can arise from:*

A-Thickening of bone :

- Detected by deep palpation if the affected side is compared with the normal side.

B-Thickening of synovial membrane :

- It is a prominent feature of chronic inflammatory arthritis.
- Best detected by palpation of the supra patellar pouch *(which is formed by reduplicated synov. membrane).*
- It has a characteristic **boggy feel on palpation.**

C- fluid within the joint (effusion):

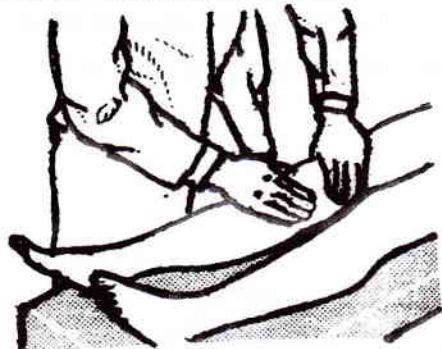
❖ *Types of fluid:*

	Serous	Blood
History	_____	Trauma Bleeding disorder
Onset	Slowly developed (12-24 hrs)	Rapidly developed (1-2 hrs after injury)
Local ex	Not tense Not painful	Tense Painful
General ex	No febrile reaction	with febrile reaction

❖ *How to test for knee effusion:*

1- Fluctuation test :-

- The palm of one hand is placed upon the thigh immediately above the patella. (i.e.:- over the supra-patellar pouch.)
- The other hand is placed over the front of the *joint*.
- Pressure of the upper hand upon the supra-patellar pouch drives fluid from the pouch into the main joint cavity where it pulges the capsule at each side of the patella and imports an easily detectable hydraulic impulse to the finger & thumb of the lower hand.
- Conversely, by pressure of this finger & thumb, the fluid can be driven back into the supra-patellar pouch & hydraulic impulse can be received clearly by the upper hand.



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2- Patellar tap:-

The patella is tapped backwards sharply so that it strikes the femur & rebounds.

- This test is -ve in the presence of fluid in two circumstances:-
 - 1- When there is insufficient fluid to raise the patella away from the femur.
 - 2- When there is tense effusion.

3- Bulge test:

- Resemble fluctuation test but squeezing the sac is from side to side.

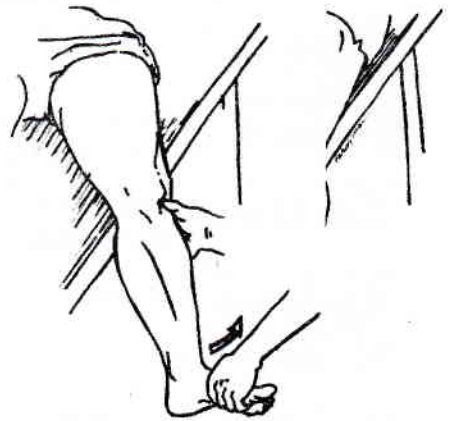
4- Hollow test :

- Effusion obliterates the hollow present normally on the lateral aspect of the knee.

Stability Tests

A- Stress tests :-

- **Stress varus & valgus tests**
 - Should be performed on the normal extremity first for later comparison.
 - The knee is flexed to 30°
 - A gentle stress (valgus or varus) is applied to the knee with one hand placed on the (lateral or medial aspect of thigh respectively) and the other hand grasping the ankle.

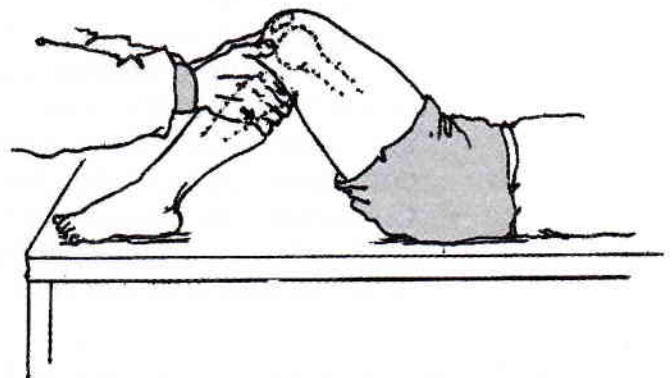
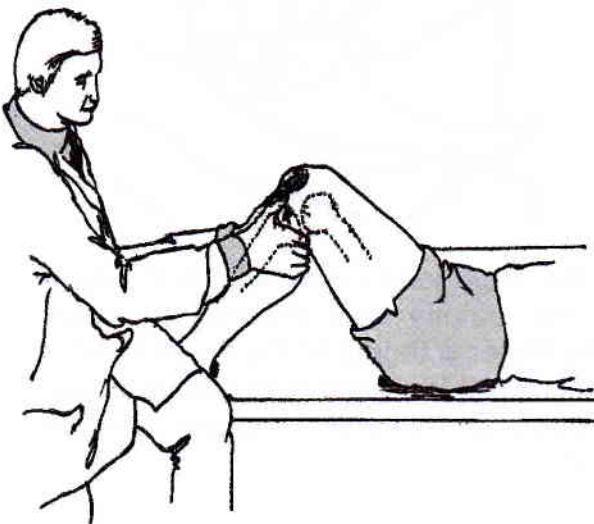


B- Drawer tests :-

- **Anterior drawer test**
- **Posterior drawer test**

"For anterior cruciate lig."

"For posterior cruciate lig."

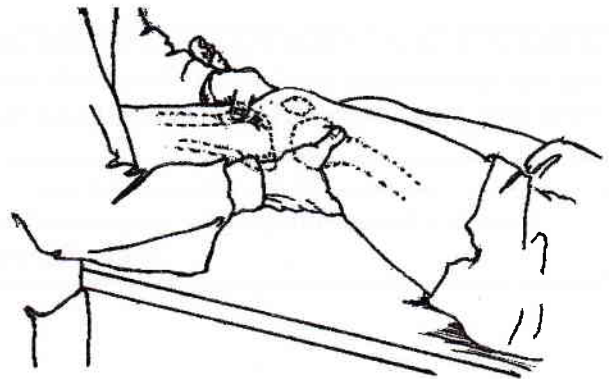


❖ Technique:

- The pt. knee being flexed to 90°
- The foot placed firmly on the couch.
- Sit slightly on the foot to prevent it from sliding.
- With the inter-locked fingers of the two hands form a sling behind the upper end of the tibia & clasp the sides of the leg between the thenar eminences.
- Place the tips of the thumbs one upon each femoral condyle.
- Ensure that the pt. has relaxed thigh muscles.
- Alternately pull & push the upper end of the tibia to determine the amount of A-P. mov. (normally, the A-P mov. is not more than 1/2 cm)

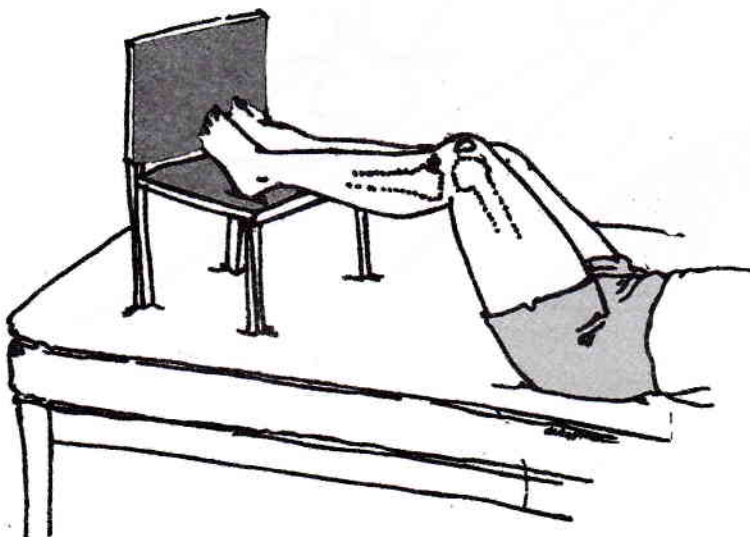
C- lachman Test:

- With the knee flexed only 15° - 20°.
- One hand supports the thigh just above the knee gripping the femoral condyles while the other hand grasps the upper end of tibia.
- While the pt. relaxes the muscles, the extent of any anterior or posterior glide of tibial condyles upon the femur is determined by push & pull movements of the tibia.



D- Sag Sign :

For posterior cruciate ligament only



Rotation Test

(Mc Murray's test)

Used only for suspected tear of the meniscus.

The maneuver is carried out by repeatedly :

- 1-** Flexing the knee, first fully but in succeeding tests progressively less fully, **then**
- 2-** Rotating the tibia upon the femur, first laterally but in further tests medially, and **finally**
- 3-** Extending the knee while the rotation of the tibia is still maintained.

A loud click, distinct from the normal patellar click and usually associated with pain, suggests a tag tear of the meniscus. Caution : loud clicks can often be produced in normal knees. Most of them arise from movements of the patella, and they are not accompanied by pain.

Browse's introduction to the symptoms & signs of surgical disease/ Ch4 Ms,tendons, bones,& joints/P133-134



Nerve Injury Sheet

I- History

- **Personal History:** (as general sheet).

- Occupational: lead poisoning of the nerve.
- Habits: alcohol neuritis.

- **Complaint:** (as general sheet)

- **Present History:**

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Ask about the followings:

1. Trauma:

- Nature (fracture, cut wound,...etc)
- Relation to nerve injury
- Any associated injury

2. Deformity, wasting of muscles, weakness or loss of active movements, trophic changes, sensory changes (type & site), loss of sweating, vasomotor changes (color changes).

3. Swelling: traumatic neuroma, neurofibroma, nodules of leprosy, callus or LNs. enlargement.

4. History suggestive of poisoning, leprosy, DM, anemia, pellagra, or syphilis.

5. In case of carpal tunnel syndrome ask about history suggestive of rheumatoid arthritis, gout or myxoedema.

6. Other systems affection.

7. History of investigations & medications.

- **Past History:** (as general sheet)

- **Family History:** leprosy, syphilis, D.M.

II- Examination

A. General Examination

- Complete neurological examination
- Search for evidences of diabetes, pellagra & lead poisoning.

B- Local Examination

Both sides are exposed and compared starting with the normal side

I- Inspection:

1. Deformity: is diagnostic.
2. Scar: (site, type of healing)
3. Wasting of muscles: along the course of muscles supplied by the examined nerve.
4. Active movements: according to affected muscle.
5. It is lost in cases of nerve, muscles of tendon injury or joint diseases.
6. Trophic changes: shiny, stretched skin, loss of hair, trophic ulcers & brittle nails with loss of their lusture.

II- Palpation:

1. Muscle power: test the active movements carried by the muscles supplied by the nerve examined against resistance.
You should feel the contracting muscle or its tendon
2. Sensations: (close the eye of the patient). Tested by pin prick.
3. Nerve: swelling (neuroma, leprosy).
4. Passive movements: stiffness of joints in long standing injury.
5. Adherence of scar to deeper structures i.e. pull on the scar → attached to deeper muscles).
6. Examine the limb: e.g.
 1. Surrounding injury.
 2. Bones (mal-united fracture or callus)
 3. Joint.

III- Percussion:

Tinel's sign (detect level of regenerating axons for follow up).

III-Diagnosis

1. **Is there a nerve injury?** (According to clinical picture).
2. **Type of nerve injury** (partial or complete).
3. **Nature of nerve injury:** neuropraxia, axonotmesis or neurotmesis.
4. **Level of nerve injury:** according to site of trauma, extent of sensory loss or extent of paralysis & palpable neuroma.

Ulnar Nerve Injury

Exposure from the nipple upwards to allow examination of roots, trunks, divisions, cords & nerves of brachial plexus bilaterally.

I- Inspection:

1. **Deformity: partial claw hand.**
2. **Scar:** (site and type of healing)
3. Wasting of med. aspect of forearm, hypothenar eminence, palm & dorsum of the hand (Palmar & dorsal interossei) & adductor pollicis muscle.
4. Active movements:
 - a) **Hypothenar (Abductor digiti minimi):** abduction of little fingers while fixing the middle 3 fingers (to avoid the action of dorsal interossei).
 - b) **Dorsal interossei:** abduction of fingers on the level of a table
 - c) **Palmar interossei:** adduction of fingers on the level of a table.

Any abduction or adduction of fingers should be done on the level of a table to avoid the diverging and converging action of extensors and flexors of the finger respectively
 - d) **Lumbricles:** paralysis of the medial 2 lumbricles causing partial claw hand.
 - e) **Adductor pollicis:** froment test positive as there is flexion in spite of adduction to keep the paper.
 - f) **Flexor carpi ulnaris:** Flexion of wrist → ulnar deviation.
 - g) **Med. 1/2 of flexor digitorum profundus:** flexion of terminal phalanx of little & ring fingers while supporting middle phalanges of these fingers (to avoid action of F.D.S).

II- Palpation:

1. Motor power: active movements against resistance.
2. Sensation along medial 1/3 of palm and dorsum of hand as well as the palmar and dorsal aspects of the medial 1 1/2 fingers.
3. Palpation of the nerve in the axilla, med. aspect of arm, behind the med. epicondyle, along the med. aspect of the front of the forearm & the wrist.
4. Passive movements.

III- Percussion: Tinel's test

Browse's introduction to the symptoms & signs of surgical disease/ Ch5 conditions peculiar to the hand/p146-147

Median Nerve Injury

I- Inspection:

1. **Deformity:** ape hand
2. **Scar (site and type of healing)** the axilla, arm, lat. Aspect of forearm or the wrist.
3. **Wasting** of lat. aspect of front of forearm & thenar eminence
4. **Trophic changes** in the area of the skin supplied by the median n.
5. **Active Movements:**
 - **Pronator teres and quadratus:** pronation of supinated flexed forearm with upper arm adducted (**to avoid int. rotation of shoulder**).
 - **Flexor Carpi Radialis:** Flexion of wrist → ulnar deviation
 - **Lateral 1/2 of Flexor Digitorum Profundus:** flexion of terminal phalanx of index & middle fingers while supporting their middle phalanges (**to avoid the action of FDS**).
 - **Flexor Digitorum Superficialis:**
Flexion of middle phalanx, of med. 4 fingers. Test one finger while fixing the other 3 fingers (Grhame's test). This test depends on the anatomical fact that the action of flexor digitorum profundus is mass action while action of flexor digitorum superficialis is isolated.
 - **Lat. Half of FDP & FDS & Lateral 2 Lumbricles:**
To test all flexors of all joints of the index & middle fingers.

- * **Ochner's clasping test:** ask the pt. to clasp the 2 hands.
- * **Benediction attitude:** ask the p. to raise his hands facing you, the outstretched index finger and the serial flexion of the other fingers has been linked to the attitude of the hand of a priest with his arm held aloft, giving God's blessing to the congregation..
- * **Pistol hand:** ask the pt. to close the hand.

- In median nerve injury any of the above leads to pointing of index finger.

⇒ **Movements of thumb:**

1. **Flexor Pollicis Longus:** flexion of terminal phalanx while fixing proximal phalanges (to avoid action of flexor pollices brevis)
2. **Flexor Pollicis Brevis;** flexion of extended proximal phalanx.
3. **Abductor pollicis brevis:**
 - **Pen touching**
 - Ask the pt. to touch the pen by the side of extended thumb (to avoid the action of abductor pollices longus) while the dorsum of the hand is fixed on a table.
 - **Wartenberg's oriental prayer's position:**
 - Ask the pt. to touch the tips of index & thumb of both sides.
 - In median nerve injury the tip of the thumb of the affected side touching the base of the pulp of the normal thumb
4. **Opponens Pollicis:** loss of apposition.

II-Palpation:

1. **Motor power:** active movements against resistance.
2. **Sensation:** along the lat. 2/3 of the palm of the hand & the palmar aspect of lat. 3 1/2 fingers as well as the dorsal aspect of the terminal & middle phalanges of these fingers.
3. **Palpation of the nerve** in the axilla, cubital fossa & lat. aspect of arm & forearm
4. **Passive movements**

III- Percussion: Tinel's test

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Radial Nerve Injury

I. Inspection

1. **Deformity:** Flexion of elbow, pronation of forearm, wrist & fingers drop.
2. **Scar:** (site and type of healing)
3. **Wasting:** Along back of arm & back of forearm
4. **Active movements:**
 - **Triceps:** extension of elbow.
 - **Brachioradialis:** flexion of elbow in the midway between pronation & supination
 - **Supinator:** supination of pronated hand to avoid the action of biceps muscle.
 - **Extensors of wrist:** extension of flexed wrist while supporting the forearm.
 - **Extensors of fingers:** extension of fingers while fixing the wrist.
 - **Extensor carpi radialis** (longus & brevis) & extensor carpi ulnaris:
 - Radial & ulnar deviation of extended wrist.
5. Trophic changes along the skin of back of U.L.

Hand Grip: (weak due to lack of fixation of wrist in extension)

II. Palpation:

1. **Motor Power:** active movements against resistance. ^
2. **Loss of sensation** on the dorsum of the first metacarpal bone.
3. **Palpation of the radial nerve** in the axilla, post, aspect of arm & lat. aspect of elbow.
4. **Passive movements.**

III. PERCUSSION Tinel's test

Special Notes

1. D.D of claw hand:

- Ulnar (partial) claw hand,
- Combined ulnar and median N. injuries
- Klumpke's paralysis.
- Injury of medial cord of brachial plexus,
- Volkmann's ischaemia,
- After burn or Dupuytren's contracture,
- Advanced rheumatoid arthritis,
- Neglected tenosynovitis of ulnar bursa.
- Neurological causes (syringomyelia...etc).

-
2. **Ulnar paradox:** injury of ulnar nerve at elbow → less marked deformity while injury at wrist → more marked claw hand.
3. **Rapid testing of radial, median & ulnar nerves:**
- a) Movements of thumb: adduction (ulnar), extension (radial) & other movements (median).
 - b) Sensation of ring finger: medial aspect (ulnar), lateral aspect (anteriorly → median & posteriorly → radial).
 - c) Characteristic deformity.
 - d) Froment's test (ulnar), clasping test (median) & fingers drop (radial).

Q. What are the factors affecting prognosis of the injured nerve?

- A.
- 1. Neuroapraxia has the best prognosis.
 - 2. Better prognosis occurs with the purely motor nerves than mixed ones.
 - 3. Nerve supplying a bulky muscle has better prognosis than that supplying a fine muscle.
 - 4. Good apposition of the cut ends of the nerve.
 - 5. Asepsis: sepsis interfere with regeneration due to fibrosis, ascending neuritis and loss of nerve tissue.

Q. What are the evidence of nerve regeneration?

- A.
- 1. The 1st to recover is the crude sensation.
 - 2. Then the motor power "starts proximally early then distally".
 - 3. Then epicretic sensation is the last to recover.
 - 4. Tinnel's sign: percussion just distal to the site of cut nerve corresponds to the possible site of the regenerated nerve.

Browse's introduction to the symptoms & signs of surgical disease/ Ch5 conditions peculiar to the hand/ p146-147

Parotid Swelling

I- History

➤ **Personal History** (as usual).

1. **Age:** mumps in children, or malignancy in old age.
2. **Sex:** tumors are more common in males.
3. **Occupation:** Occupational disease in trumpet players & glass blowers.
4. **Oral hygiene.**

➤ **Complaint:** as usual

➤ **Present history:**

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1. **Pain:** (analysis as usual). This occurs in sialoadenitis, mumps, autoimmune sialoadenitis, duct stone or late malignancy.
2. **Swelling:** as usual but notice the effect of eating on the pain and size of the swelling.
3. **Disturbance of function:**
 - Manifestations of autoimmune sialoadenitis: as dryness of the mouth and conjunctiva and rheumatoid arthritis.
 - Local manifestation in the form of facial palsy (inability to close the eyes, accumulation of food between the gum & the cheek, dripping of saliva from the angle of the mouth),
 - Manifestation of metastasis: (as usual)
4. **History of investigation and treatment.**

➤ **Past History:** as usual + oral sepsis, oral breathing, hypertension etc.

➤ **Family History:** as usual.

II- Examination

A. General Examination:

- **Aim:** detection of LNs enlargement, signs of metastasis or signs of autoimmune disease.

B. Local Examination:

I. Features of the swellings:

- Notice that the swelling elevates the lobule of the ear because the deep fascia of the parotid is defective upwards

Examine the following:

1. **Facial nerve:**
2. **Masseter:** Ask the pt. to clinch the teeth.
3. **Sternomastoid:** Ask the pt. to turn his face to the opposite side against resistance.

NB. - Parotid swelling is superficial to masseter and sternomastoid but swelling of ramus of mandible is deep to masseter.

- Malignant swelling of parotid gland may become fixed to masseter or sternomastoid.

4. **Superficial temporal pulsation** (in front of tragus of the auricle). Weak or absent pulsation in malignancy.
5. **Oral cavity:**
 - Position of the tonsil: if it is displaced medially it means enlargement of deep lobe of parotid gland.
 - Orifice of parotid duct (Stenson's duct) opposite the upper 2nd. Molar tooth. In suppurative sialoadenitis, there are inflamed, red, raised orifice with pus comes out on compression of the swelling.
6. **Relation to bone.**
7. **Examination of upper and lower deep cervical L.Ns.**

Submandibular gland swelling

I-History:

- **Personal history:**
 - **Age**: young or middle age (not common in children)
 - **Sex**: males=females
- **HPI:**
 - **pain**: dull aching radiating to ear or tongue
 - **swelling**: beneath the jaw

Both worsens after eating

II-Examination:

- **Site**: swelling in the digastric triangle
- **No**: solitary (in order to be differentiated from the submandibular LNs)
Can't be rolled over the angle of the mandible
- **Inspection of floor of mouth**: May reveal redness of the duct orifice
- **Bimanual examination**: Reveals that swelling is in the floor of the mouth

Tumors of parotid gland

I-Benign tumors

I-Pleomorphic adenoma

I-History:

- **Personal history**: male old age
- **HPI**:
 - Slowly growing painless swelling in the side of the face
 - Swelling becomes more prominent on contraction of the masseter ms, but doesn't actually increase on size on eating

II-Examination:

- Site:** - swelling over the mandibular ramus
- welldefined
 - lobulated
 - freely mobile(not attached to the skin ms or bones)
 - variable consistency(firm or cystic but never hard)
 - elevating lobule of the ear
 - no cervical LN enlargement or facial n. infiltration

II-monomorphic adenoma: (Warthin's tumor)

History:

Personal history: Male old age

HPI: Painless slowly growing small swelling over the angle of the jaw

Examination:

Site swelling over the mandibular ramus

- May be bilat.
- Small not elevating the lobule if the ear
- Cystic in consistency

Carcinoma of the salivary gland

History:

Personal history: male old age

HPI: painless rapidly growing swelling on the side of the face

Pain is usu. Late & radiates to the ear

Disturbance of function: asymmetry of the mouth & or difficulty in closing the
Eyes

Examination:

Swelling in the site of the parotid gland

- Usually Warm & mildly tender
- Firm or hard in consistency
- Nodular surface
- ill defined edge
- Infiltration of the skin
- Infiltration of the facial n.(which may range from mild weakness of the lower
Lip up to complete facial n. palsy)

Cervical LN are enlarged, stony hard, mobile then fixed

Oral Discussion

Q. Surface anatomy of the parotid gland?

A.

Parotid gland: Connect the following 4 points

- Head of mandible
- Middle of masseter muscle
- 2cm below & behind the angle of mandible
- Center of mastoid process

Parotid duct:

It correspond to the middle $\frac{1}{3}$ of horizontal line drawn from the tragus of the ear to a point on the upper lip midway between the ala of the nose & the angle of the mouth.

Q. What is your diagnosis?

A. Swelling in the parotid gland most probably stones

Q. How do you reach this diagnosis?

A.

O/H: Mostly asymptomatic

History of pain & swelling that increases after eating

O/E: Solitary swelling in the site of the parotid gland (acc. To the surface anatomy)

- Raising the lobule of the ear
- Firm & tender
- Overlying skin is warm, red & edematous
- The duct (Stenson's) is red, edematous, may discharge pus, & stone may be felt by bimanual examination

Q. What are the investigations needed?

A.

- Investigation For infection : CBC: leucocytosis, ESR, C&S,
- Investigation For stones: -Plain x-ray
 - Sialography: is the best because the parotid stones are Radiolucent appear as a filling defect
 - US: shows the stone as echogenic structure

Q. What are the complications of parotid gland stones?

A.

- Infection
- Abscess
- Fistula

Q. What's treatment ?

- If stone is in the substance of the gland: Superficial conservative parotidectomy
- If stone is in the duct: removed through the mouth under local anesthesia

Q. Treatment of complications?

A.

1-infection:

- Before abscess formation: 3A(antibiotics, analgesics, antipyretics)
- After abscess formation: surgical drainage by Hilton's tech. (don't wait for fluctuation as fluctuation is very late)

2-salivary fistula:

- If in the duct
 - **masseteric:** excision with end to end anastomosis
 - **Premasseteric:** reimplant the duct in the buccinators
- If in the gland
 - **Conservative:** Parasympatholytic drug to decrease secretions
 - **Surgical:** Avulsion of the auriculotemporal n.
(secretory fibers to parotid gland if failed superficial parotidectomy)

Case 2: Submandibular gland stones

Q.what is the incidence of salivary gland stones?

A.

Submandibular > parotid (50: 1) due to:

- 1-gland secretions are more viscid with high Ca. concentrations
- 2-duct ascends upwards inadequate drainage
- 3-orifice lies in the floor of the mouth liable to be blocked by food particles

Q. what's your diagnosis?

A.

Swelling in the digastric triangle most probably submandibular gland stones

Q.how do u reach this diagnosis?

A.

O/H: History of pain & swelling that increases in after eating

O/E: Swelling below the mandibular ramus

- Firm & tender
- Overlying skin is warm, red & edematous
- The duct (Warton's) is red, edematous, may discharge pus, & stone may felt by bimanual examination

Q. how to differentiate between submandibular gland stones & submandibular LN Enlargement?

A.

- 1- history of pain & swelling that increases in after eating
- 2-swelling is solitary & can't be rolled over the mandible
- 3- inspection of the mouth floor may reveal redness of duct orifice?
- 4-bimanual palpation reveals swelling is filling the floor of the mouth?

Q. what are the investigations needed?

A.

1. plain x-ray (closed mouth view) : stone in the submandibular gland is radio-opaque in 80 % of cases
2. sialogram: shows the radiolucent stones

Q. what is the treatment of this case?

A.

- If submandibular gland stone → submandibular sialadenectomy
- If stone in the duct → removed through mouth under local anesthesia

Neoplasm Of The Salivary Gland

Q. what is your diagnosis?

A.

❖ Tumor of the parotid gland:

1-if the swelling is

- Swelling over the mandibular ramus on one side
- Well defined
- Lobulated
- Freely mobile(not attached to the skin ms or bones)
- Variable consistency(firm or cystic but never hard)
- Elevating lobule of the ear
- No cervical LN enlargement or facial n. infiltration

➤ This most probably pleomorphic adenoma

Q What is your management?

A.

1. Investigation: - CT scan for assessment of tumors arising from deep part in the parotid
- FNABC: in 90 % shows pleomorphic adenoma
2. Treatment:
 - If in the superficial part → Conservative superficial parotidectomy
 - If in the deep part → Total conservative parotidectomy

2- if the swelling is :

- Site : swelling over the mandibular ramus
- May be bilateral.
- Small not elevating the lobule of the ear
- Cystic in consistency
- This is most probably monomorphic adenoma

Q What is your management?

A.

Management as above

3-if the swelling is:

Swelling in the site of the parotid gland

- Usually warm & mildly tender
- Firm or hard in consistency
- Nodular surface
- ill defined edge
- Infiltration of the skin
- Infiltration of the facial n. (which may range from mild weakness of the lower lip up to complete facial n. palsy)
- Cervical LN are enlarged, stony hard, mobile then fixed

➤ This is most probably carcinoma of the parotid gland

Q. what are other types of carcinoma of the salivary gland according to the microscopic picture?

1-mucoepidermoid:

2-adenoid cystic carcinoma

3-Acinar cell carcinoma

4-adenocarcinoma

5-carcinoma ex pleomorphic adenoma

6-undifferentiated

Q. what is your management?

✓ Investigation:

- For diagnosis: FNABC: shows the microscopic pic.
- For staging: CT scan to determine the local extent of the tumor, metastatic workup

✓ Treatment:

- If operable

According to the site of the tumor:

1. **Carcinoma in the parotid gland:**

- Total radical parotidectomy+ total block dissection of the neck LN
+ postoperative radiotherapy to decrease recurrence

2. **Carcinoma in the submandibular gland:**

- Commando operation(total radical submandibular sialadnectomy+
hemimandibulectomy) +part of the tongue+ block dissection of the
neck LNs

- If inoperable

Palliative resection+ radiotherapy

Browse's introduction to the symptoms & signs of surgical disease/ Ch9 the salivary glands p 239

Cleft Lip & Palate

I- History:

- **Personal History:** (as usual)
- **Complaint:** a mother complaining from disfigurement in her baby.
- **Present History:**
 - 1- Cleft lip is discovered since birth.
 - 2- Ask about any abnormalities during pregnancy.
 - 3- Ask about the predisposing factors (for the mother)
 - + Fever and skin rashes (German measles)
 - Drug intake especially during 1st trimester e.g. salicylates, corticosteroids or cytotoxic drugs.
 - Exposure to irradiation.
 - 4- Ask about the complications: (for the baby):
 - Difficult suckling or feeding.
 - Regurgitation of fluid & food from the nose (in cleft palate)
 - Impairment of phonation and speech.
 - Impairment of dentition with maldirected teeth.
 - Impairment of hearing with repeated otitis media (in cleft palate)
 - 5- History of investigations and treatment.
- **Past History:** similar condition, syphilis, fever or disease to mother.
- **Family History:** positive family history or consanguinity

II- Examination:

A-General examination:

(For any congenital anomalies)

Search for other anomalies of VACTERL

- 1- **Head & Neck:**
 - Defect or swelling related to skull (cranium bifidum)
 - Neck swelling (cystic hygroma, thyroglossal cyst, branchial cyst or sequestration dermoid cyst)
 - Fistula (branchial fistula)
- 2- **Chest and heart:** for congenital heart diseases.
- 3- **Back:** spina bifida.
- 4- **Abdomn and inguino-scrotal region:**
 - Renal swelling (polycystic kidney or ectopic kidney)
 - Congenital umbilical hernia.
 - Absent testis (undescended or ectopic)
 - Site of external urethral meatus (epispadias or hypospadias)
 - Ectopia vesica.
 - Imperforate anus (if newly born)
- 5- **Limb:**
 - Polydactyly or syndactyly.
 - Congenital A-V fistula.
 - Congenital lymphodema.

B-Local examination:

1. Examination for cleft lip:

- a) Upper or lower lip
- b) Lateral or median
- c) Unilateral or bilateral
- d) Complete or incomplete.
- e) Simple or alveolar.

2. Examination for cleft palate:

- a) Type: cleft uvula, cleft soft palate
- b) Intermaxillary cleft.
- c) Bipartite cleft.
- d) Tripartite cleft.

III- Diagnosis

For example: a case of unilateral complete cleft lip with bipartite cleft palate, complicated by difficult feeding and otitis media.

Hypospadias

A. General examination: for the congenital anomalies.

B. Local examination: detect the followings:

- 1- Site of E.U.M) → glanular, penile, perineal.
- 2- Circumcision:
- 3- Direction of penis.
- 4- Local anomalies (undescended testis, congenital hernia and ectopia vesica)

Undescended Testis

A. General examination: for the congenital anomalies.

B. Local examination:

- 1- Development of scrotum:
 - Not well developed and there is deviation of the median raphe if unilateral undescended testis
 - In maldescended testis and retractile testis, the scrotum is not well-developed.
- 2- Testis:
 - Try to detect the site of the absent testis.
 - Size of testis (atrophy or tumor)
 - Testicular sensation.
- 3- If the scrotum is well-developed:
 - Effect of squatting (descend in the scrotum in retractile testis)
 - Effect of contraction of anterior abdominal wall (ectopic testis is superficial to muscle)
- 4- Examination: for inguinal hernia.
- 5- Other local congenital anomalies.